

# **Appendix C**

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## **Biological Resources Reports**

# **Appendix C.1**

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2010 Focused Survey for Desert Tortoise  
*(Gopherus agassizii)*



## **Desert Harvest**

### **2010 Focused Survey for Desert Tortoise (*Gopherus agassizii*)**

Riverside County, California  
Township 4 South, Range 15 East, Sections 25, 26 & 27  
USGS 7.5' *Victory Pass & East of Victory Pass* Quadrangles

Prepared for:

**Aspen Environmental Group**  
235 Montgomery Street, No. 935  
San Francisco, CA 94104  
(415) 955-4775 x 203  
Contact: Susan V. Lee, Vice President  
SLee@aspeneq.com

Prepared by:

**AMEC Earth & Environmental, Inc.**  
3120 Chicago Avenue, Suite 110  
Riverside, CA 92507  
(951) 369-8060  
(FAX) 369-8035

Principal Investigator:

**Michael D. Wilcox**  
Wildlife Biologist/Ecologist  
michael.wilcox@amec.com

**AMEC Job # 1055400425**

**Report Date: 18 April 2011**



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## Desert Harvest

### 2010 Focused Survey for Desert Tortoise (*Gopherus agassizii*) Report

#### EXECUTIVE SUMMARY

A focused survey for the desert tortoise (*Gopherus agassizii*) was conducted by AMEC Earth & Environmental, Inc. (AMEC) between 12-17 April 2010 for the proposed Desert Harvest project (project), located in unincorporated eastern Riverside County, California. The 1,057-acre project site, which is located on lands administered by the Bureau of Land Management (BLM), is proposed to be the location of a 100-150 mega-watt photovoltaic panel solar power plant. This study, contracted to AMEC by Aspen Environmental Group (Aspen), presents the results of AMEC's field surveys on the proposed project site and in the site's zone of influence (ZOI). An additional 270-acre parcel was added to the project site, after completion of the 2010 desert tortoise survey. This focused survey report addresses only the larger eastern parcel; the southwestern 270-acre parcel area was not included in the scope of this study.

The project site is located within the Colorado Desert Recovery Unit as described in the Draft Revised Desert Tortoise Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*) (USFWS 2008) but not within designated critical habitat for the desert tortoise. The nearest designated critical habitat for the desert tortoise is the Chuckwalla Unit located approximately 1 mile southwest of the project site. A portion of the project site, the western-most 113.3 acres of the (currently unsurveyed) southwestern 270-acre parcel, however is within the Chuckwalla Desert Wildlife Management Area (DWMA) for the desert tortoise (USFWS 2008).

A literature search was conducted to identify special-status biological resources known from the vicinity of the project site. The focused survey for the desert tortoise was conducted in accordance with the currently accepted survey protocol "Preparing For Any Action That May Occur Within the Range of the Mojave Desert Tortoise" (USFWS 2010).

No live desert tortoises or recent sign were observed on the project site or within the ZOI. However, desert tortoises have the potential to occupy the site. Two desert tortoise burrows, designated as class 2 (good condition) and class 3 (deteriorated condition), were observed onsite. Neither burrow exhibited any evidence of recent use or corroborating sign. Several class 5 (disarticulated and scattered) bone fragments, possibly of tortoise origin, were also found within one area of the project site. A road-killed desert tortoise was observed at the Eagle Mountain off ramp on east-bound Interstate 10 (I-10) approximately 7.5 miles southwest of the site (see Figure 2).

The desert tortoise occurs onsite and in the vicinity, evident by the presence of the two burrows, the road-killed tortoise observed en-route to the site, and possibly the three small bone fragments. These results are consistent with what is already known about desert tortoise

occurrence this region of the Colorado Desert: desert tortoises occur in relatively low numbers in this part of their geographic range. The US Fish and Wildlife Service (USFWS) desert tortoise survey guidelines consider the presence of any tortoise sign (scat, burrows, and carcasses) to indicate presence of desert tortoise (USFWS 2010).

Evidence of one other special-status wildlife species, the American badger (*Taxidea taxus*), was found onsite during the surveys, as well. The American badger is designated as a California Species of Special Concern (CSSC) by the California Department of Fish and Game (CDFG).

There is potential for a variety other special-status wildlife species to occur onsite and in the vicinity, based on CNDDDB records, geographic range and presence of suitable habitat. These include burrowing owl (*Athene cunicularia*), prairie falcon (*Falco mexicanus*), Bendire's thrasher (*Toxostoma bendirei*), Le Conte's thrasher (*Toxostoma lecontei*), Nelson's bighorn sheep (*Ovis canadensis nelsoni*), and California leaf-nosed bat (*Macrotus californicus*). No further analysis of potential occurrence of these species or other biological resources is provided in this report. A separate, comprehensive biological assessment for this project, should address these species, along with other special-status resources (e.g., nesting birds protected by the Migratory Bird Treaty Act, jurisdictional waters of the California and United States).

## Desert Harvest

### 2010 Focused Survey for Desert Tortoise (*Gopherus agassizii*) Report

#### 1.0 INTRODUCTION

AMEC Earth & Environmental, Inc. (AMEC) was contracted by Aspen Environmental Group (Aspen) to conduct a focused survey for desert tortoise (*Gopherus agassizii*) in spring 2010 for the proposed Desert Harvest photovoltaic solar energy project (herein “project” or “action area”) located in unincorporated Riverside County California. The proposed project consists of the development of a 100-150 mega-watt photovoltaic panel solar power plant. The objective of this study is to determine the presence or absence of the desert tortoise on, and within the zone of influence of, the project site.

The Mojave population of the desert tortoise, which includes tortoises occurring in California’s Colorado Desert, is federally and state listed as threatened. Development projects proposed within the geographic range of desert tortoise require an assessment of site’s habitat suitability and focused surveys, where suitable habitat is present, in order to determine the onsite status of the species. Impacts to desert tortoise require both federal and state permitting as well as incorporation of impact avoidance (where possible), minimization, and mitigation measures into project design.

#### 2.0 PROJECT LOCATION & HABITAT DESCRIPTION

The Desert Harvest project site is located on public lands administered by the Bureau of Land Management (BLM) in unincorporated Riverside County, approximately 6 miles north of Desert Center, California (Township 4 South, Range 15 East, Sections 25, 26, 27, USGS 7.5’ *Victory Pass & East of Victory Pass* quadrangles)(see Figure 1). The applicant, enXco Development Corporation (enXco) proposes to build a 100-150 mega-watt (MW) solar plant incorporating thin-film photovoltaic panels (enXco 2010). The serialized application number assigned by the BLM for this project is 049491. The Right of Way Application consists of two non-contiguous parcels (see Figures 2 and 3). The eastern parcel is 1,057 acres and the southwestern parcel is 270 acres. This report addresses the larger, eastern parcel only.

The project site is currently vacant, undeveloped, natural open space. Dominant vegetation communities occurring onsite include Creosote Bush-White Burr Sage Scrub and Smoke Tree Woodland (Sawyer et al. 2009). The Creosote Bush-White Burr Sage Scrub vegetation community is the equivalent to the “Sonoran Creosote Bush Scrub” and the Smoke Tree Woodland is the equivalent to the “Desert Dry Wash Woodland” described by Holland (1986).

The Creosote Bush-White Burr Sage Scrub vegetation community is the most widespread vegetation type in the Colorado Desert. This vegetation community is characterized by low shrub species diversity and the wide spacing of the shrubs, usually with bare ground between, and is comprised of the codominant species creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Other shrubs occurring in smaller numbers include cheesebush (*Ambrosia salsola*), brittlebush (*Encelia farinosa*), pencil cholla (*Cylindropuntia ramosissima*),

beavertail cactus (*Opuntia basilaris*), California fagonia (*Fagonia laevis*), and sticky fagonia (*Fagonia pachyacantha*). Many species of seasonal annuals, including desert sunflower (*Geraea canescens*), desert dandelion (*Malacothrix glabrata*), and desert four-spot (*Eremalche rotundifolia*), were observed onsite. The Creosote Bush-White Burr Sage Scrub community also includes small patches of desert pavement with very sparse vegetative cover composed primarily of devil's spineflower (*Chorizanthe rigida*), kidneyleaf buckwheat (*Eriogonum reniforme*), and Emory's rock daisy (*Perityle emoryi*). Desert pavement are areas where the desert surfaces are covered with closely packed, interlocking rocks and pebbles, which serves as a barrier to many plants germinating and taking root.

The Smoke Tree Woodland occurs throughout the onsite dry washes and is dominated by ironwood (*Olneya tesota*) and smoketree (*Psoralea spinosus*), with blue palo verde (*Parkinsonia florida*), and cat claw acacia (*Acacia greggii*) occurring in lesser amounts. Smoke Tree Woodlands are characterized by the presence of arborescent, often spiny, shrubs generally associated with washes or alluvial deposits adjacent to washes. Plant species in desert wash habitats are generally taller, up to approximately 9m (30 ft) in height, and denser than those of surrounding desert habitats, such as the Creosote Bush-White Burr Sage Scrub on the project site, with the height of the wash vegetation proportional to the size of the arroyo (Mayer 1988). The Smoke Tree Woodland on the project site fits this description, with the ironwood, smoketree, and palo verde exceeding both the height and density of the surrounding Creosote Bush-White Burr Sage Scrub vegetation community, with many of the individual shrubs of the Smoke Tree Woodland located along the low, vertically-incised banks. This habitat supports a variety of wildlife species, essentially the same species as those occupying the Creosote Bush-White Burr Sage Scrub.

Ground surface visibility is greater than 80% (enXco 2010). Site topography is mostly flat with elevations ranging from 583 to 675 feet above mean sea level. Soils vary from sandy alluvium to hard packed desert pavement. Onsite ephemeral drainages flow southeasterly towards Desert Center at a slope of less than 1% (enXco 2010).

Surrounding land uses include undeveloped natural open space to the west, north and south. Some of the lands to the southeast of the site have been converted to agricultural uses in the past (jojoba [*Simmondsia chinensis*] farming) and appear to be presently abandoned.

The project site is located within the Colorado Desert Recovery Unit as described in the Draft Revised Desert Tortoise Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*), but not within designated critical habitat for the desert tortoise (USFWS 2008). The closest designated critical habitat, the Chuckwalla Unit, is located approximately 1 mile southwest of the project site. A portion of the project site, the western-most 113.3 acres of the (currently unsurveyed) southwestern 270-acre parcel, is within the Chuckwalla Desert Wildlife Management Area (DWMA) for the desert tortoise (USFWS 2008)(see Figure 3).

Desert tortoise density estimates for the 1994-designated Eastern Colorado Recovery Unit in which the site is located ranged from 10.80 tortoises per km<sup>2</sup> in 2001 to 6.38 tortoises per km<sup>2</sup> in 2005 (USFWS 2008).

### 3.0 METHODS

#### 3.1 Field Survey

A literature search was conducted to identify special-status biological resources known from the vicinity of the project site. In the context of this report, and for the purpose of this assessment, vicinity is defined as areas within an approximate 10-mile radius of the site. The literature search included a review of the following documents:

- California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDDB) version 3.1.1 RAREFIND application (CDFG 2010)
- CNDDDB's Special Animals List (CNDDDB 2009)
- USGS 7.5' *Victory Pass, East of Victory Pass, Desert Center and Corn Spring* California quadrangles

The focused survey for the desert tortoise was conducted over 100% of the project site and within the project's buffer zone of Influence (ZOI) in accordance with the currently accepted survey protocol "Preparing for any Action that may Occur within the Range of the Mojave Desert Tortoise" (USFWS 2010) (see Table 1). Desert tortoise surveys were conducted on April 12 through 17, 2010 by biologists Jim Boone, PhD., Stephen Ferrand, William Ferrand, Alex Heindl, Nathan T. Moorhatch, Michael Omana, Dennis Strong and Michael D. Wilcox. AMEC botanist Shari Norton conducted an onsite focused survey for rare plant species concurrent with the focused desert tortoise surveys (see Table 1 below).

Belt transects, spaced 10 meters (m) apart, were systematically walked over the 1,057-acre project site. When observed, desert tortoise sign (i.e., live tortoises, tracks, burrows, scat, carcasses and bone fragments) was documented on appropriate survey forms (USFWS 2010 Desert Tortoise Pre-Project Survey Data Sheet). Desert tortoise sign observed was photographed with digital cameras and mapped using handheld GPS equipment. Where present, desert woodrat (*Neotoma lepida*) middens and animal burrows of various kinds (e.g., desert kit fox, coyote, badger, ground squirrel, kangaroo rat, burrowing owl, etc.) were carefully inspected for presence of desert tortoises and their sign. Parallel belt transects were also walked within the ZOI around the perimeter of the site (where access was granted) at intervals of 200, 400 and 600 m.

General weather conditions were recorded at the start and end of each survey. Temperatures and time of day were recorded at the start and end of each transect. Weather conditions during the surveys varied from gusty winds and light rain to sunny and calm (see Table 1). Temperatures ranged from 56-95 degrees Fahrenheit (F). All wildlife detected was recorded on field forms and/or notes and a list of all species observed is included in Appendix 3.

**Table 1: Survey Conditions and Data.**

Date	Start/End	Personnel	Temperatures (F)	Wind (mph)	Cloud cover (%)
12 Apr 10	0854-1705	JB, BF, SF, MO, DS, AH, NM, SN	56-77	3-15	~ 20-90, drizzle
13 Apr 10	0816-1557	JB, BF, SF, MO, DS, AH, NM, SN	58-80	0-7	0
14 Apr 10	0843-1435	JB, BF, SF, MO, DS, AH, NM, SN	67-87	0-7	0
15 Apr 10	0751-1532	JB, SF, MO, DS, AH, SN, MW	68-88	0-7	0
16 Apr 10	0850-1727	JB, BF, SF, MO, DS, AH, SN, MW	77-95	0-9	0
17 Apr 10	0712-1141	JB, BF, SF, MO, DS, AH,	68-88	3-10	0

**Key to personnel:** JB (Jim Boone), BF (Bill Ferrand), SF (Stephen Ferrand), MO (Michael Omana, DS (Dennis Strong), AH (Alex Heindl), NM (Nathan Moorhatch), SN (Shari Norton), MW (Michael Wilcox)

#### 4.0 RESULTS

The CNDDDB (2010) reports records of six special-status wildlife species in the vicinity of the project site. These include the desert tortoise, prairie falcon (*Falco mexicanus*), Bendire's thrasher (*Toxostoma bendirei*), Le Conte's thrasher (*Toxostoma lecontei*), Nelson's bighorn sheep (*Ovis canadensis nelsoni*), and California leaf-nosed bat (*Macrotus californicus*).

No live desert tortoises, active burrows, scat, tracks/prints, drinking depressions, courtship rings, or complete carcasses were observed on the project site or within the ZOI. Two desert tortoise burrows were found onsite. These included one class 2 and one class 3, definite desert tortoise burrows, in good condition but without evidence of recent use and degraded condition respectively (see Figure 2). Table 2 provides additional details regarding desert tortoise sign classifications. Three class 5 bone fragments, possibly of tortoise origin, were also found within one area and may have been washed onto the site from upstream. The carapace and plastron (upper and lower shell) of the tortoise's anatomy are made up of fused plates of bone with scutes (keratin layers) attached. These plates of bone and scutes typically exhibit characteristic sutures or lines where they are fused to the adjoining plates or scutes. The scutes also exhibit growth rings or annuli. The bone fragments found onsite did not exhibit obvious sutures or lines typical of tortoise carapace or plastron bone, but because of their shape and size, which are both consistent with tortoise bone, they are considered by AMEC to be potential tortoise remains (see Figure 2 and Photos 7-8). Due to their old age, highly weathered surfaces and edges, and the small size of the fragments, assigning them definitively to tortoise was not possible. No scutes were observed. Although considerably offsite, a road-killed desert tortoise was observed at the Eagle Mountain off ramp of east-bound Interstate 10 (I-10) approximately

7.5 miles southwest of the site (see Figure 2). The closest known record of desert tortoise was 3.6 miles north of the site (CNDDDB 2010).

**Table 2: Desert Tortoise Sign Key**

Sign Type	Class 1	Class 2	Class 3	Class 4	Class 5
Burrow and Den	Currently active with tortoise or recent tortoise sign	Good condition, definitely tortoise but no evidence of recent use	Deteriorated condition but is definitely tortoise	Deteriorated condition, possibly tortoise (no other corroborating sign)	Good condition, possibly tortoise (no other corroborating sign)
Scat	Wet or moist but not from rain or dew or dried but with obvious odor	Dry, dark brown, has a glaze, and some odor	Dry, has no glaze or odor, is slightly bleached, is light brown, and plant fibers are tightly packed	Dry, has no glaze or odor, is somewhat bleached, is light brown to pale yellow, plant fibers are not tightly packed, and has a scaly appearance.	Dry, has no glaze or odor, is bleached, is white, and consists only of plant fibers
Carcasses, Shell Remains and bone fragments	Fresh or putrid	Fresh or putrid, is of normal color and the scutes adhere to the bone	Scutes are peeling from the bone	Shell bone is falling apart and the growth rings on the scutes are peeling	Disarticulated and scattered

Other wildlife detected included species common to the deserts of southern California (see Appendix 3). Representative reptiles included desert iguana (*Dipsosaurus dorsalis*), side-blotched lizard (*Uta stansburinana*), western whiptail (*Aspidozelis tigris*), desert horned lizard (*Phrynosoma platyrhinos*), zebra-tailed lizard (*Callisaurus draconoides*), patch-nosed snake (*Salvadora hexalepis*) and sidewinder (*Crotalus cerastes*). Bird species observed included cactus wren (*Campylorhynchus brunneicapillus*), black-throated sparrow (*Amphispiza bilineata*), Gambel's quail (*Callipepla gambelii*) and lesser nighthawk (*Chordeiles acutipennis*). Mammals

detected included kangaroo rat (*Dipodomys* sp.), desert kit fox (*Vulpes macrotis arsipus*) and coyote (*Canis latrans*). The mammals were primarily identified indirectly, by burrows, bones, scat and prints/tracks. Desert kit fox colonies and kangaroo rat burrows were abundant throughout the site. Desert kit fox is not listed as a special-status species by CDFG or BLM, but it is protected under Title 14, California Code of Regulations (Title 14, Section 460) from trapping and hunting. Several species of kangaroo rat may occur in the area, but none are rare or are listed as a special-status species by CDFG or BLM. They cannot be identified to species from the burrow characteristics observed in the field.

## 5.0 OTHER SPECIAL-STATUS SPECIES OBSERVED

One other special-status wildlife species, the American badger (*Taxidea taxus*) was detected onsite during the surveys. Three burrows belonging to the badger, evident by the length of the excavated tailings (which is testament to their digging power) were observed and mapped (see Figure 2 and Photo 11). The badger burrows did not exhibit any recent sign of use (no scat, tracks or fresh tailings). The American badger is designated as a California Species of Special Concern (CSSC) by the CDFG.

## 6.0 CONCLUSIONS

The focused surveys detected no live tortoises or sign of recent tortoise occupation onsite. However, desert tortoise occurs in the vicinity, evident by the desert tortoise burrows, the three small bone fragments, and the road-killed desert tortoise observed en-route to the site. Desert tortoises should be expected to occur on the project site in low densities. These results are consistent with what is already known about desert tortoise occurrence this region of the Colorado Desert: desert tortoises occur in relatively low numbers in this part of their geographic range.

Three burrows belonging to the American badger were also observed onsite. The American badger is designated a CSSC by the CDFG. We conclude that American badger is present onsite.

Although not observed, there is potential for a variety other special-status wildlife species to occur onsite based on CNDDDB records, geographic range and presence of suitable habitat. These include burrowing owl (*Athene cunicularia*), prairie falcon, Bendire's thrasher, Le Conte's thrasher, Nelson's bighorn sheep, and California leaf-nosed bat. These species and other special-status resources (e.g., nesting birds protected by the Migratory Bird Treaty Act; and state-jurisdictional streambeds or federally-jurisdictional waters of the United States) should be addressed in a separate comprehensive biological technical report for the project, and are not included within the scope of this focused desert tortoise survey report.

## 7.0 LITERATURE CITED AND REFERENCES

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# **APPENDIX 1**

## **Desert Harvest**

### **FIGURES**

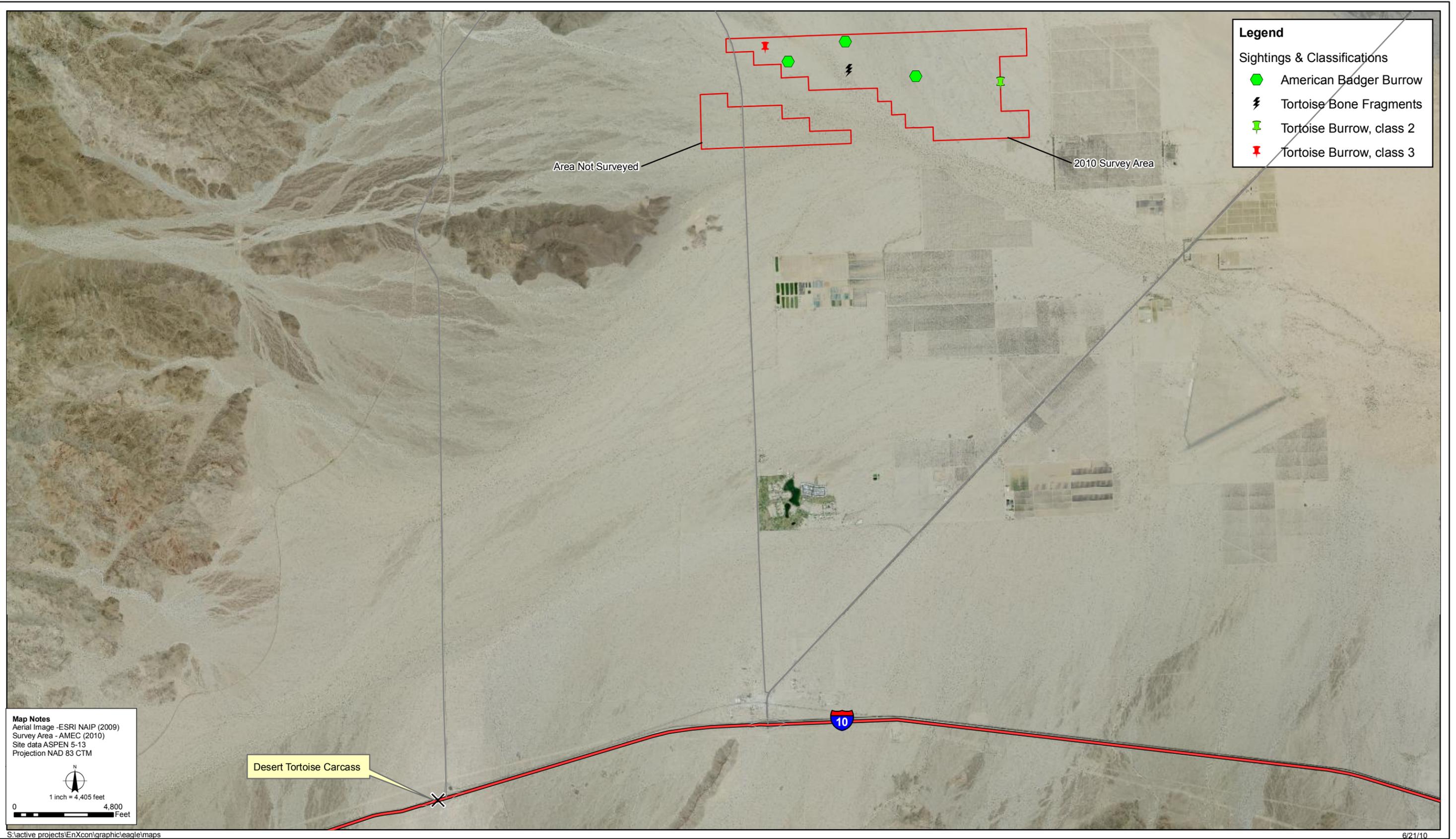


Regional Location  
Desert Harvest Project

FIGURE

1





**Legend**

Sightings & Classifications

- ⬡ American Badger Burrow
- ⚡ Tortoise Bone Fragments
- 📌 Tortoise Burrow, class 2
- 📌 Tortoise Burrow, class 3

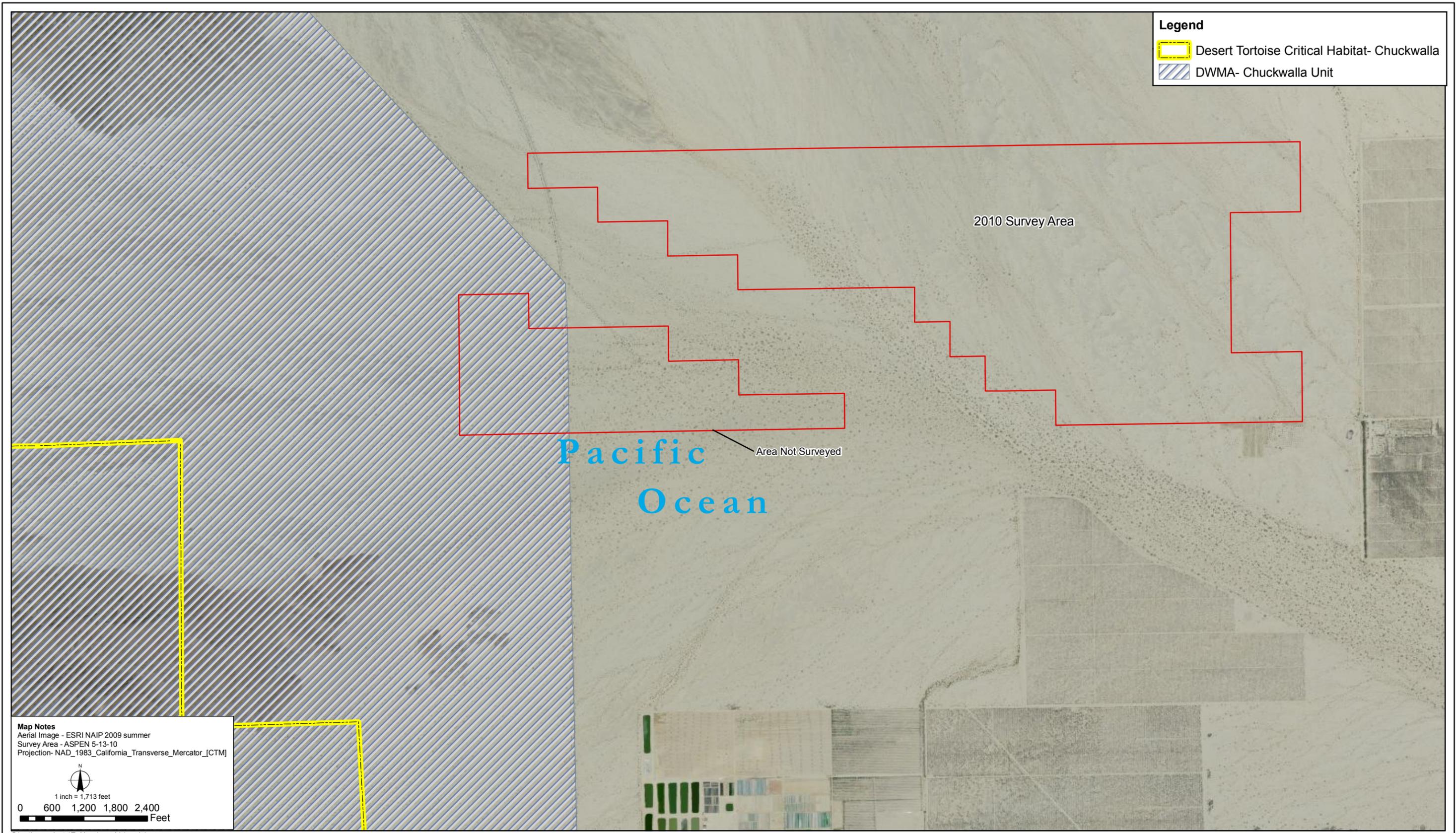
Area Not Surveyed

2010 Survey Area

Desert Tortoise Carcass



**Survey Results  
 Desert Harvest Project**



Desert Tortoise Critical Habitat & Desert Wildlife Management Area  
 Desert Harvest Project

FIGURE

## **APPENDIX 2**

### **Desert Harvest**

#### **REPRESENTATIVE SITE PHOTOS**

## Desert Harvest Project



**Photo 1.** Representative example of Creosote Bush-White Burr Sage Scrub vegetation community during the focused desert tortoise and concurrent rare plant surveys.



**Photo 2.** Biologists walking transects during the focused desert tortoise and concurrent rare plant surveys.

## Desert Harvest Project



**Photo 3.** Representative example of Smoke Tree Woodland vegetation community during the focused desert tortoise and concurrent rare plant surveys.



**Photo 4.** Representative example of Smoke Tree Woodland vegetation community during the focused desert tortoise and concurrent rare plant surveys.

## Desert Harvest Project



**Photo 5.** Representative example of sparsely-vegetated desert pavement soils during the focused desert tortoise and concurrent rare plant surveys.



**Photo 6.** Biologists recording data at the end of their transects during the focused desert tortoise and concurrent rare plant surveys.

## Desert Harvest Project



**Photo 7.** Possible desert tortoise (class 5) bone fragment.



**Photo 8.** Possible desert tortoise (class 5) bone fragment.

## Desert Harvest Project



**Photo 9.** Representative example of kit fox colony with multiple burrow entrances.



**Photo 10.** Representative onsite American badger burrow.

## **APPENDIX 3**

### **Desert Harvest**

#### **OBSERVED FAUNA SPECIES LIST**

## APPENDIX 3

### Wildlife Observed on Desert Harvest

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This list reports only plants and animals observed on or immediately adjacent to the site while conducting focused desert tortoise and rare plant surveys for this project. Other species may have been overlooked or undetectable due to their activity season.

Nomenclature and taxonomy for fauna observed on site follows Stebbins (1985) and Collins (1990) for herpetofauna, American Ornithologists' Union Checklist (1983 and supplements) for avifauna, and Laudenslayer *et al.* (1991) for mammals.

---

#### HERPETOFAUNA

##### TESTUDINES

###### Testudinidae

\*\**Gopherus agassizii*

##### SQUAMATA

###### Crotaphytidae

*Gambelia wislizenii*

###### Iguanidae

*Dipsosaurus dorsalis*

###### Phrynosomatidae

*Callisaurus draconoides*

*Phrynosoma platyrhinos*

*Sceloporus magister*

*Urosaurus graciosus*

*Uta stansburiana*

###### Teiidae

*Aspidozelis tigris*

###### Colubridae

*Salvadora hexalepis*

###### Viperidae

*Crotalus cerastes*

#### AVIFAUNA

##### Odontophoridae

*Callipepla gambelii*

##### Cathartidae

*Cathartes aura*

#### REPTILES & AMPHIBIANS

##### TURTLES

###### Land Tortoises

desert tortoise (burrows, bone fragments)

##### LIZARDS & SNAKES

###### Collared and Leopard Lizards

long-nosed leopard lizard

###### Iguanids

desert iguana

###### Spiny Lizards & Relatives

zebra-tailed lizard

desert horned lizard

desert spiny lizard

long-tailed brush lizard

side-blotched lizard

###### Whiptails & Racerunners

Western whiptail

###### Colubrids

patch-nosed snake

###### Vipers

sidewinder

#### BIRDS

##### New World Quail

Gambel's quail

##### Vultures

turkey vulture

**Columbidae***Zenaida macroura***Caprimulgidae***Chordeiles acutipennis***Apodidae***Chaetura vauxi***Corvidae***Corvus corax***Alaudidae***Eremophila alpestris***Hirundinidae***Hirundo rustica**Petrochelidon pyrrhonota***Remizidae***Auriparus flaviceps***Troglodytidae***Campylorhynchus brunneicapillus***Thraupidae***Piranga ludoviciana***Emberizidae***Amphispiza bilineata**Chondestes grammacus**Spizella breweri***MAMMALIA****Leporidae***Lepus californicus***Sciuridae***Spermophilus tereticaudus***Heteromyidae***Dipodomys sp.***Muridae***Neotoma lepida***Mustelidae***\*\*Taxidea taxus***Canidae***Canis latrans**Vulpes macrotis arsipus***Pigeons and Doves**

mourning dove

**Goatsuckers**

lesser nighthawk

**Swifts**

Vaux's swift

**Jays, Magpies, and Crows**

common raven

**Larks**

horned lark

**Swallows**

barn swallow

cliff swallow

**Verdin**

verdin

**Wrens**

cactus wren

**Tanagers**

western tanager

**Emberizines**

black-throated sparrow

lark sparrow

Brewer's sparrow

**MAMMALS****Rabbits and Hares**

black-tailed jackrabbit

**Squirrels**

round-tailed ground squirrel

**Hereromyid Rodents**

kangaroo rat (burrows)

**Rats, Mice, and Voles**

desert woodrat (middens)

**Weasels & Relatives**

American badger (burrows)

**Foxes, Wolves, Coyotes**

coyote (burrows, scat, prints/tracks)

desert kit fox (bones, burrows, colonies, scat, prints/tracks)

**\*\* Special-status species**

## **Appendix C.2**

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2011 Focused Survey for Desert Tortoise  
(*Gopherus agassizii*) on Southwestern  
Portion of ROW Application



## **Desert Harvest**

### **2011 Focused Survey for Desert Tortoise (*Gopherus agassizii*) on Southwestern Portion of ROW Application**

Riverside County, California  
Township 4 South, Range 15 East, Sections 26 & 27  
USGS 7.5' *Victory Pass* Quadrangle

Prepared for:

**Aspen Environmental Group**  
235 Montgomery Street, No. 935  
San Francisco, CA 94104  
(415) 955-4775 x 203  
Contact: Susan V. Lee, Vice President  
SLee@aspeneg.com

Prepared by:

**AMEC Earth & Environmental, Inc.**  
3120 Chicago Avenue, Suite 110  
Riverside, CA 92507  
(951) 369-8060  
(FAX) 369-8035

Principal Investigator:

**Michael D. Wilcox**  
Wildlife Biologist/Ecologist  
michael.wilcox@amec.com

**AMEC Job # 1155400460**

**Report Date: 16 September 2011**

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## Desert Harvest

### 2011 Focused Survey for Desert Tortoise (*Gopherus agassizii*) on Southwestern Portion of ROW Application

#### EXECUTIVE SUMMARY

A focused survey for the desert tortoise (*Gopherus agassizii*) was conducted by AMEC Earth & Environmental, Inc. (AMEC) between 26-28 May 2011 on a portion of the proposed Desert Harvest project (project), located in unincorporated eastern Riverside County, California. The 270-acre survey area is located near and southwest of, but is not contiguous to a larger 1,057-acre portion of the project site, which was surveyed by AMEC for desert tortoise and rare plants in 2010. Both sites are located on lands administered by the Bureau of Land Management (BLM) and are proposed to be the location of a 100-150 mega-watt photovoltaic panel solar power plant. This study, contracted to AMEC by Aspen Environmental Group (Aspen), presents the results of the field surveys for the 270-acre site and in this site's zone of influence (ZOI).

The project site is located within the Colorado Desert Recovery Unit as described in the Draft Revised Desert Tortoise Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*) (United States Fish and Wildlife Service [USFWS] 2008) but not within designated critical habitat for the desert tortoise. The nearest designated critical habitat for the desert tortoise is the Chuckwalla Unit located approximately 1 mile southwest of the project site. The western-most 113 acres of the 270-acre site (i.e., the area west of Kaiser Road), however is within the Chuckwalla Desert Wildlife Management Area (DWMA) for the desert tortoise (USFWS 2008).

A literature search was conducted to identify special-status biological resources known from the vicinity of the project site. The focused survey for the desert tortoise was conducted in accordance with the currently accepted survey protocol (USFWS 2010).

No live desert tortoises or any definitive sign of desert tortoise were observed on the project site or within the ZOI. Eight possible desert tortoise burrows, designated as class 5 (possibly tortoise, good condition), were observed onsite. One additional class 5, possible desert tortoise burrow, was also observed offsite, within the zone of influence. None of these burrows exhibited any evidence of recent use or corroborating sign. No live desert tortoises, active or definitive desert tortoise burrows, scat, tracks/prints, drinking depressions, courtship rings, carcasses or fragments of carcasses were observed on the project site or within the ZOI.

Although not observed onsite, the desert tortoise occurs in the vicinity, evident by the presence of two definite tortoise burrows and three small, possible tortoise bone fragments observed in 2010 on the 1,057-acre site, approximately 0.5 mile northeast of the 270-acre subject site and a road-killed tortoise observed in 2010 near the Eagle Mountain off ramp on east-bound Interstate 10 (I-10) approximately 6.5 miles southwest of the site. These results are consistent with what is already known about desert tortoise occurrence this region of the Colorado Desert: desert tortoises occur in relatively low numbers in this part of their geographic range. The

USFWS desert tortoise survey guidelines consider the presence of any tortoise sign (scat, burrows, and carcasses) to indicate presence of desert tortoise (USFWS 2010).

Emory's crucifixion thorn (*Castela emoryi*), a California Native Plant Species (CNPS) List 2.3 species, were incidentally observed throughout the site (see Photos 3 & 4 in Appendix 2).

Although no live tortoises or definitive sign thereof were observed onsite, there is a possibility that desert tortoise could occur onsite at any time in the future. This conclusion is based on CNDDDB records for the desert tortoise in the vicinity, the tortoise sign found on the 1,057-acre Desert Harvest site and the road-killed desert tortoise observed near the Eagle Mountain off ramp of the east-bound Interstate 10 in 2010.

Based on CNDDDB records, a variety other special-status wildlife species may have potential to occur onsite and in the vicinity. These include burrowing owl (*Athene cunicularia*), prairie falcon (*Falco mexicanus*), Bendire's thrasher (*Toxostoma bendirei*), Le Conte's thrasher (*Toxostoma lecontei*), Nelson's bighorn sheep (*Ovis canadensis nelsoni*), pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), and California leaf-nosed bat (*Macrotus californicus*). No further analysis of potential occurrence of these species or other biological resources is provided in this report. A separate, comprehensive biological technical report prepared for this project, should address these species, along with other special-status resources (e.g., rare plants, nesting birds protected by the Migratory Bird Treaty Act, and jurisdictional waters of the California and United States).

## Desert Harvest

### 2011 Focused Survey for Desert Tortoise (*Gopherus agassizii*) on Southwestern Portion of ROW Application

#### 1.0 INTRODUCTION

AMEC Earth & Environmental, Inc. (AMEC) was contracted by Aspen Environmental Group (Aspen) to conduct a focused survey for desert tortoise (*Gopherus agassizii*) in spring 2011 on a 270-acre portion of the proposed Desert Harvest photovoltaic solar energy project site (herein “project” or “site”) located in unincorporated Riverside County California. The proposed project consists of the development of a 100-150 mega-watt photovoltaic panel solar power plant. The objective of this study is to determine the presence or absence of the desert tortoise on, and within the zone of influence of, the 270-acre portion of the site.

The Mojave population of the desert tortoise, which includes tortoises occurring in California’s Colorado Desert, is federally and state listed as threatened. Development projects proposed within the geographic range of desert tortoise require an assessment of site’s habitat suitability and focused surveys, where suitable habitat is present, in order to determine the onsite status of the species. Impacts to desert tortoise require both federal and state permitting as well as incorporation of impact avoidance (where possible), minimization, and mitigation measures into project design.

#### 2.0 PROJECT LOCATION & HABITAT DESCRIPTION

The Desert Harvest project site is located on public lands administered by the Bureau of Land Management (BLM) in unincorporated Riverside County, approximately 6 miles north of Desert Center, California (Township 4 South, Range 15 East, Sections 26 & 27, USGS 7.5’ *Victory Pass* quadrangle) (see Figure 1). The site consists of two noncontiguous parcels, the 270-acre southeastern portion, which is the subject of this study and a northeastern 1,057-acre portion which was surveyed by AMEC for the desert tortoise and rare plants in 2010. The applicant, enXco Development Corporation (enXco) proposes to build a 100-150 mega-watt (MW) solar plant incorporating thin-film photovoltaic panels (enXco 2010). The serialized application number assigned by the BLM for this project is 049491.

The project site is currently vacant, undeveloped, natural open space. Dominant vegetation communities occurring onsite most closely match the creosote bush-white burr sage scrub (*Larrea tridentata* – *Ambrosia dumosa* shrubland alliance) and blue palo verde–ironwood woodland (*Parkinsonia florida* – *Olneya tesota* woodland alliance) as described by Sawyer et al. (2009). The creosote bush-white burr sage series is included within the “Sonoran creosote bush scrub” and blue palo verde–ironwood alliance is included within the “desert dry wash woodland” described by Holland (1986).

The creosote bush-white burr sage series is the most widespread vegetation type in the Colorado Desert. This vegetation is characterized by low shrub species diversity and the wide

spacing of the shrubs, usually with bare ground between, and is comprised of the codominant species creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*).

The blue palo verde–ironwood woodland occurs throughout the onsite dry washes and is dominated by ironwood (*Olneya tesota*) with lesser amounts of blue palo verde (*Parkinsonia florida*). This vegetation is characterized by the presence of arborescent, often spiny, shrubby trees generally associated with washes or alluvial deposits adjacent to washes. In general, plant species in desert wash habitats are taller, up to approximately 9m (30 ft) in height, and the washes are more densely vegetated than surrounding plant communities, such as the creosote bush-white burr sage series on the project site, with the height of the wash vegetation proportional to the size of the arroyo (Mayer and Laudenslayer 1988). The blue palo verde–ironwood woodland on the project site fits this description, with the ironwood and palo verde exceeding both the height and density of the surrounding creosote bush-white burr sage series and with many of the individual shrubs of this community located along the low, braided and vertically-incised banks of the onsite dry washes. This habitat supports a variety of wildlife species, essentially the same species as those occupying the creosote bush-white burr sage scrub.

Stands of Emory's crucifixion thorn (*Castela emoryi*), which consisted of up to nine individual plants sparsely distributed over a relatively small area, were also noted intermittently throughout the site (see Photos 3 & 4 in Appendix 2). Emory's crucifixion thorn is a California Native Plant Species (CNPS) List 2.3 species.

Ground surface visibility is greater than 80% (enXco 2010). Site topography is mostly flat with elevations ranging from 583 to 675 feet above mean sea level. Soils vary from sandy alluvium to hard packed desert pavement. Onsite ephemeral drainages flow southeasterly towards Desert Center at a slope of less than 1% (enXco 2010).

Surrounding land uses include undeveloped natural open space to the west, north and south. Some of the lands to the southeast of the site have been converted to agricultural uses in the past (jojoba [*Simmondsia chinensis*] farming) and appear to be presently abandoned.

The project site is located within the Colorado Desert Recovery Unit as described in the Draft Revised Desert Tortoise Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*), but not within designated critical habitat for the desert tortoise (USFWS 2008). The closest designated critical habitat, the Chuckwalla Unit, is located approximately 1 mile southwest of the project site. A portion of the project site, the approximate western-most 113.3 acres of the 270-acre site, is within the Chuckwalla Desert Wildlife Management Area (DWMA) for the desert tortoise (USFWS 2008) (see Figure 3).

Desert tortoise density estimates for the 1994-designated Eastern Colorado Recovery Unit in which the site is located ranged from 10.80 tortoises per km<sup>2</sup> in 2001 to 6.38 tortoises per km<sup>2</sup> in 2005 (USFWS 2008).

### 3.0 METHODS

#### 3.1 Field Survey

A literature search was conducted to identify desert tortoise and other special-status biological resources known from the vicinity of the project site. In the context of this report, and for the purpose of this assessment, vicinity is defined as areas within an approximate 10-mile radius of the site. The literature search included a review of the following documents:

- CNDDDB’s Special Animals List (CDFG 2011a)
- California Department of Fish and Game’s (CDFG) California Natural Diversity Database (CNDDDB) version 3.1.1 RAREFIND application (CDFG 2011b)
- USGS 7.5’ *Victory Pass, East of Victory Pass, Desert Center and Corn Spring* California quadrangles

The focused survey for the desert tortoise was conducted over 100% of the 270-acre site and within the buffer zone of Influence (ZOI) in accordance with the currently accepted survey protocol (USFWS 2010). Desert tortoise surveys were conducted on 26-28 May 2011 by AMEC biologists Matt Amalong, Tsegaye Mengistu, Nathan T. Moorhatch and Michael D. Wilcox and AMEC subconsultant Ted Rado (see Table 1 below).

**Table 1: Survey Conditions and Data.**

Date	Start/End	Personnel	Temperatures (F)	Wind (mph)	Cloud cover (%)
26 May 11	0815-1430	MA, TM, NM, TR, MW	77-100	0-10	0
27 May 11	0745-1542	MA, TM, NM, TR, MW	74-103	0-5	0
28 May 11	0609-1113	TM, TR	76-93	0-5	0

**Key to personnel:** MA (Matt Amalong), TM (Tsegaye Megistu), NM (Nathan Moorhatch), TR (Ted Rado) and MW (Michael Wilcox)

Belt transects, spaced 10 meters (m) apart, were systematically walked over the 270-acre project site. When observed, potential desert tortoise sign (i.e., burrows) was documented on appropriate survey forms (USFWS 2010). Potential desert tortoise sign observed was photographed with digital cameras and mapped using handheld GPS equipment. Where present, desert woodrat (*Neotoma lepida*) middens and animal burrows of various kinds (e.g., desert kit fox, coyote, badger, ground squirrel, kangaroo rat, burrowing owl, etc.) were carefully inspected for presence of desert tortoises and their sign. Parallel belt transects were also walked within the ZOI around the perimeter of the site at intervals of 200, 400 and 600 m.

General weather conditions were recorded at the start and end of each survey. Temperatures and time of day were recorded at the start and end of each transect. Weather conditions during the surveys consisted of clear skies with calm to slightly gusty winds (see Table 1 above).

Temperatures ranged from 74-103 degrees Fahrenheit (F). All wildlife detected was recorded on field forms and/or notes and a list of all species observed is included in Appendix 4.

#### 4.0 RESULTS

The CNDDDB (2011) reports records of nine special-status wildlife species in the vicinity of the project site. These include desert tortoise, burrowing owl (*Athene cunicularia*), prairie falcon (*Falco mexicanus*), Bendire's thrasher (*Toxostoma bendirei*), Le Conte's thrasher (*Toxostoma lecontei*), Nelson's bighorn sheep (*Ovis canadensis nelsoni*), pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), and California leaf-nosed bat (*Macrotus californicus*). No further analysis of potential occurrence of these species or other biological resources is provided in this report. A separate, comprehensive biological technical report for this project, should address these species, along with other special-status resources (e.g., nesting birds protected by the Migratory Bird Treaty Act, jurisdictional waters of the California and United States).

No live desert tortoises, active or definitive desert tortoise burrows, scat, tracks/prints, drinking depressions, courtship rings, carcasses or fragments of carcasses were observed on the project site or within the ZOI. Eight class 5 potential desert tortoise burrows were found onsite and one class 5 potential desert tortoise burrow was found offsite within the ZOI (See Figure 2 in Appendix 1). Class 5 burrows are those that are in good condition, considered to be of possible tortoise origin but lack any other associated sign such as scat, tracks, carcasses or bone fragments, etc. (see Photos 5 & 6 in Appendix 2). Table 2 on the following page provides additional details regarding desert tortoise sign classifications. In 2010, one class 2 (definite desert tortoise burrow, in good condition) and one class 3 (definite desert tortoise burrow, in degraded condition) were observed within approximately 0.5 mile northeast on the nearby 1,057-acre portion of the project site (AMEC 2010). Additionally, a road-killed desert tortoise was observed at the Eagle Mountain off ramp of east-bound Interstate 10 (I-10) approximately 6.5 miles southwest of the site in 2010 (AMEC 2010). The closest known record of a live desert tortoise is 3.6 miles north of the site (CNDDDB 2011).

Other wildlife detected included species common to the deserts of southern California (see Appendix 3). Reptiles detected included desert iguana (*Dipsosaurus dorsalis*), side-blotched lizard (*Uta stansburinana*), western whiptail (*Aspidoscelis tigris*), zebratail lizard (*Callisaurus draconoides*) and shovelnose snake (*Chinoactis occipitalis*). Bird species observed included turkey vulture (*Cathartes aura*), white-winged dove (*Zenaida asiatica*), mourning dove (*Zenaida macroura*), lesser nighthawk (*Chordeiles acutipennis*), black-tailed gnatcatcher (*Polioptila melanura*), ladder-backed woodpecker (*Picoides scalaris*), ash-throated flycatcher (*Myiarchus cinerascens*), common raven (*Corvus corax*), verdin (*Auriparus flaviceps*) and black-throated sparrow (*Amphispiza bilineata*). Mammals detected included round-tailed ground squirrel (*Spermophilus tereticaudus*), desert woodrat (*Neotoma lepida*), black-tailed jackrabbit (*Lepus californicus*), kangaroo rat (*Dipodomys* sp.) and desert kit fox (*Vulpes macrotis arsipus*). Some of the mammals detected were identified indirectly by burrows, middens, bones, scat and/or prints/tracks.

**Table 2: Desert Tortoise Sign Key**

Sign Type	Class 1	Class 2	Class 3	Class 4	Class 5
Burrow and Den	Currently active with tortoise or recent tortoise sign	Good condition, definitely tortoise but no evidence of recent use	Deteriorated condition but is definitely tortoise	Deteriorated condition, possibly tortoise (no other corroborating sign)	Good condition, possibly tortoise (no other corroborating sign)
Scat	Wet or moist but not from rain or dew or dried but with obvious odor	Dry, dark brown, has a glaze, and some odor	Dry, has no glaze or odor, is slightly bleached, is light brown, and plant fibers are tightly packed	Dry, has no glaze or odor, is somewhat bleached, is light brown to pale yellow, plant fibers are not tightly packed, and has a scaly appearance.	Dry, has no glaze or odor, is bleached, is white, and consists only of plant fibers
Carcasses, Shell Remains and bone fragments	Fresh or putrid	Fresh or putrid, is of normal color and the scutes adhere to the bone	Scutes are peeling from the bone	Shell bone is falling apart and the growth rings on the scutes are peeling	Disarticulated and scattered

Desert kit fox colonies and kangaroo rat burrows were abundant throughout the site. Desert kit fox is not listed as a special-status species by CDFG or BLM, but it is protected under Title 14, California Code of Regulations (Title 14, Section 460) from trapping and hunting. Several species of kangaroo rat may occur in the area, but none are rare or are listed as a special-status species by CDFG or BLM. They cannot be identified to species from the burrow characteristics observed in the field.

## 5.0 CONCLUSIONS

The focused surveys detected no definitive sign of desert tortoise onsite or within the ZOI. No live tortoises, definite tortoise burrows, scat, carcasses, bone fragments, drinking depressions or courtship rings were observed. A total of nine class 5 burrows considered to be possible desert tortoise were detected. These burrows were of the appropriate shape and size, but no other corroborating desert tortoise sign was found. For this reason, these burrows can only be considered to be of possible tortoise origin. The desert tortoise is, however, known to occur in the vicinity, evident by definite desert tortoise burrows and several small bone fragments found on the 1,057-acre Desert Harvest site, and a road-killed desert tortoise observed near the Eagle Mountain off ramp of the east-bound Interstate 10 in 2010. Therefore, despite lack of definitive tortoise sign, there is still potential for desert tortoise to occur on the project site in low densities at any time in the future. These results are consistent with what is already known about desert tortoise occurrence this region of the Colorado Desert: desert tortoises occur in relatively low numbers in this part of their geographic range.

Although not observed, there is potential for a variety of other special-status wildlife species to occur onsite based on CNDDDB records, geographic range and presence of suitable habitat. These include burrowing owl (*Athene cunicularia*), prairie falcon (*Falco mexicanus*), Bendire's thrasher (*Toxostoma bendirei*), Le Conte's thrasher (*Toxostoma lecontei*), Nelson's bighorn sheep (*Ovis canadensis nelsoni*), pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), and California leaf-nosed bat (*Macrotus californicus*). These species and other special-status resources (e.g., nesting birds protected by the Migratory Bird Treaty Act; and state-jurisdictional streambeds or federally-jurisdictional waters of the United States) should be addressed in a separate comprehensive biological technical report for the project, and are not included within the scope of this focused desert tortoise survey report.

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# **APPENDIX 1**

## **Desert Harvest**

### **FIGURES**

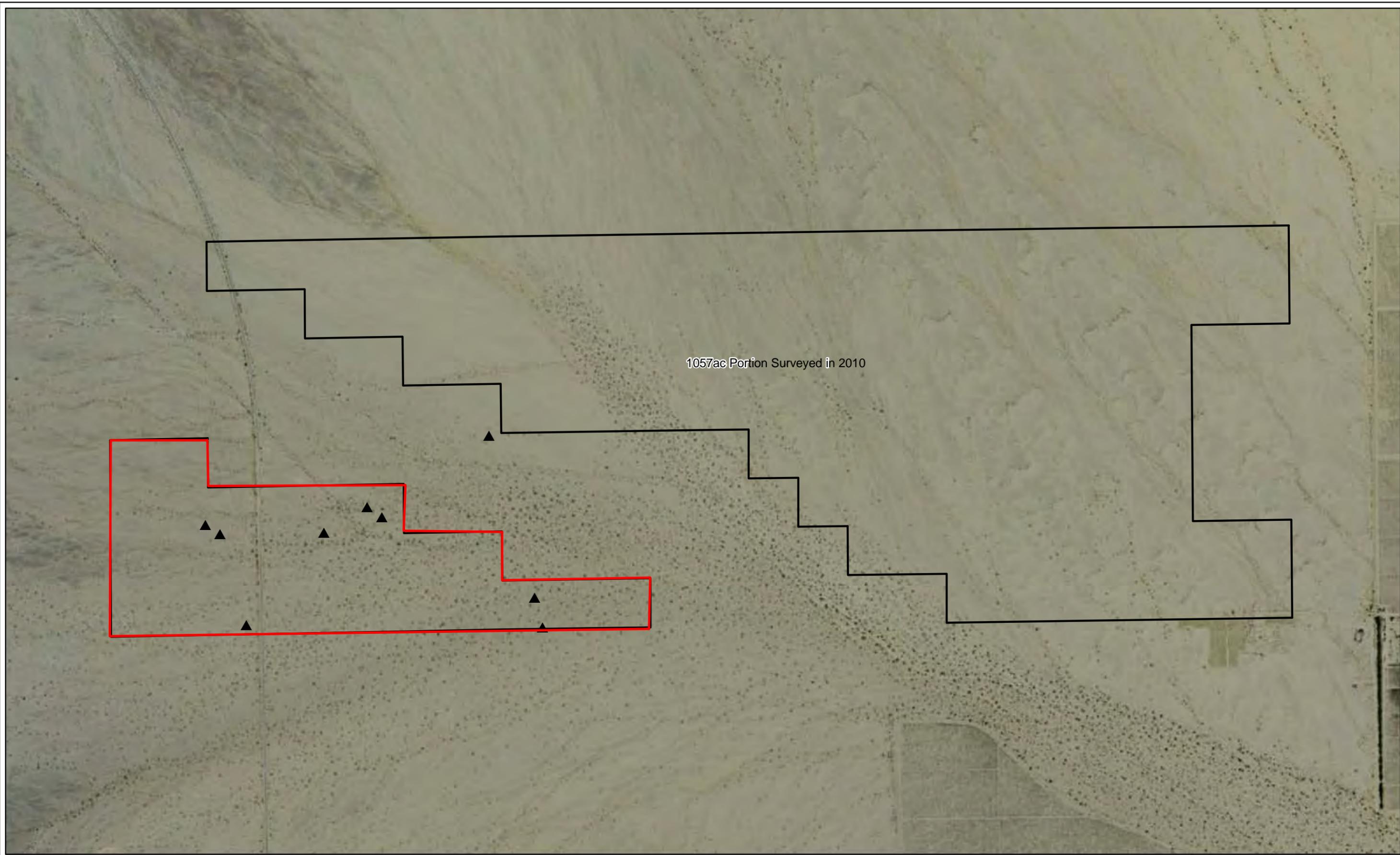


Regional Location  
Desert Harvest Project

FIGURE

1





1057ac Portion Surveyed in 2010

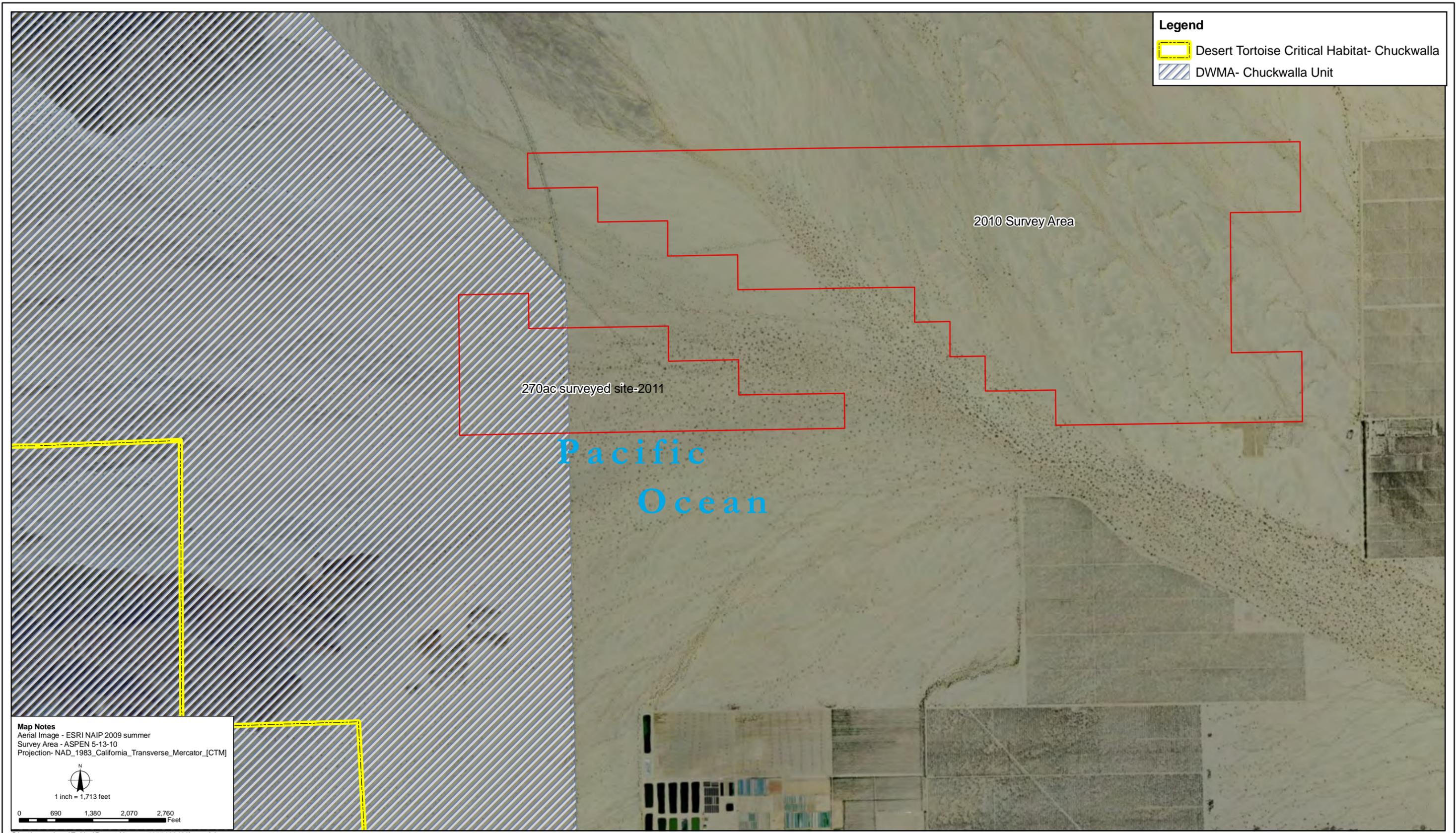
270ac Site Boundary\*  
 Possible Desert Tortoise Burrow

\*4/13/10

Desert Harvest Project  
**Figure 2**  
 Desert Tortoise Sign

0      1,000      2,000 Feet

Data-  
 Projection: NAD\_1983\_California\_Transverse\_Mercator\_[CTM]  
 Resources: Boundary\_EagleMtn\_041310(ASPEN)  
 Path:S:\active projects\EnXco\Desert Harvest 1155400460  
 Survey :AMEC-5.26-28.11  
 Date: 8/15/11



Desert Tortoise Critical Habitat & Desert Wildlife Management Area  
 Desert Harvest Project

FIGURE



## **APPENDIX 2**

### **Desert Harvest**

#### **REPRESENTATIVE SITE PHOTOS**

## Desert Harvest



**Photo 1.** Representative example of creosote bush-white bursage and blue palo verde–ironwood woodland present on the 270-acre parcel.



**Photo 2.** Representative example of creosote bush-white bursage and blue palo verde–ironwood woodland series present on the 270-acre parcel.

## Desert Harvest Project



**Photo 3.** Emory's crucifixion thorn plants observed onsite. Surveyors lined up on transects in background, representative small mammal burrow in foreground beneath shrub.



**Photo 4.** Surveyor stands next to an onsite Emory's crucifixion thorn.

## Desert Harvest Project



**Photo 5.** Onsite class 5 “possible” desert tortoise burrow observed during surveys.



**Photo 6.** Onsite class 5 “possible” desert tortoise burrow observed during surveys.

## **APPENDIX 3**

### **Desert Harvest**

#### **OBSERVED FAUNA SPECIES LIST**

## APPENDIX 3

### Wildlife Observed on Desert Harvest 270-acre Site

---

This list reports only plants and animals observed on or immediately adjacent to the site while conducting focused desert tortoise and rare plant surveys for this project. Other species may have been overlooked or undetectable due to their activity season.

Nomenclature and taxonomy for fauna observed on site follows Stebbins (2003) and Collins and Taggert (2009) for herpetofauna, American Ornithologists' Union Checklist (1983 and supplements) for avifauna, and Laudenslayer *et al.* (1991) for mammals.

---

#### HERPETOFAUNA

##### SQUAMATA

###### Iguanidae

*Dipsosaurus dorsalis*

###### Phrynosomatidae

*Callisaurus draconoides*

*Uta stansburiana*

###### Teiidae

*Aspidozelis tigris*

###### Colubridae

*Chionactis occipitalis*

#### AVIFAUNA

##### Cathartidae

*Cathartes aura*

##### Columbidae

*Zenaidura macroura*

*Zenaidura macroura*

##### Caprimulgidae

*Chordeiles acutipennis*

##### Tyrannidae

*Myiarchus cinerascens*

##### Picidae

*Picoides scalaris*

##### Corvidae

*Corvus corax*

#### REPTILES & AMPHIBIANS

##### LIZARDS & SNAKES

###### Iguanids

desert iguana

###### Spiny Lizards & Relatives

zebratail lizard

side-blotched lizard

###### Whiptails & Racerunners

western whiptail

###### Colubrids

western shovelnose snake

#### BIRDS

##### Vultures

turkey vulture

##### Pigeons and Doves

white-winged dove

mourning dove

##### Goatsuckers

lesser nighthawk

##### Tyrant Flycatchers

ash-throated flycatcher

##### Woodpeckers and Allies

ladder-backed woodpecker

##### Jays, Magpies, and Crows

common raven

**Remizidae**

*Auriparus flaviceps*

**Sylviidae**

*Polioptila melanura*

**Emberizidae**

*Amphispiza bilineata*

**MAMMALIA****Leporidae**

*Lepus californicus*

**Sciuridae**

*Spermophilus tereticaudus*

**Heteromyidae**

*Dipodomys* sp.

**Muridae**

*Neotoma lepida*

**Canidae**

*Vulpes macrotis arsipus*

**Verdin**

verdin

**Old World Warblers and Gnatcatchers**

black-tailed gnatcatcher

**Emberizines**

black-throated sparrow

**MAMMALS****Rabbits and Hares**

black-tailed jackrabbit

**Squirrels**

round-tailed ground squirrel

**Hereromyid Rodents**

kangaroo rat (burrows)

**Rats, Mice, and Voles**

desert woodrat (middens)

**Foxes, Wolves, Coyotes**

desert kit fox (bones, burrows, colonies, scat, prints/tracks)

\*\* Special-status species

## **APPENDIX 4**

### **Desert Harvest**

#### **FIELD SURVEY FORMS**

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 26 May 2011 Survey biologist(s): Matt Amalongo, matt.amalongo@amec.com, 949-232-134  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest, N of Desert Center (~5 miles N)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ac Transect #: 4 Transect length: 0.75 mile

GPS Start-point: 648052, 3739736, 201 Start time: 8:15 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 849643, 3739766, 190 End time: 8:51 am/pm  
(easting, northing, elevation in meters)

Start Temp: 25 °C End Temp: 30 °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 26 May 2011 Survey biologist(s): Matt Amalony, matt.amalony@anec.com, 747-233-  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest ~5 miles N of Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ac Transect #: 9 Transect length: 1.4 miles

GPS Start-point: 649641, 3739814, 189 Start time: 9:05 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 647425, 3739775, 211 End time: 10:02 am/pm  
(easting, northing, elevation in meters)

Start Temp: 30 °C End Temp: 31 °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 26 May 2011 Survey biologist(s): Matt Amalony, matt.amalony@ancc.com, 949-233-2134  
(day, month/year) (name/email, and phone number)

Site description: Desert Harvest ~5 mi. N of Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ac. Transect #: 14 Transect length: 1.4 mi.

GPS Start-point: 647424, 3739825, 211 Start time: 10:13  am/pm  
(easting, northing, elevation in meters)

GPS End-point: 649640, 3739864, 191 End time: 11:07  am/pm  
(easting, northing, elevation in meters)

Start Temp: 31 °C End Temp: 33 °C

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 26 May 2011 Survey biologist(s): Matt Amalony, matt.amalony@amec.com, 949-233-2134  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest ~ 5 mi. N of Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaver Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one:  100% coverage or  Sampling Area size to be surveyed: 257 ac. Transect #: 19 Transect length: 1.4 mi.

GPS Start-point: 649639, 3737914, 190 Start time: 11:24 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 647423, 3739875, 210 End time: 12:29 am/pm  
(easting, northing, elevation in meters)

Start Temp: 33 °C End Temp: 33 °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 26 May 2011 Survey biologist(s): Matt Amalony, matt.amalony@amec.com, 949233213  
(day, month, year) (name, email, and phonenumber)

Site description: Desert Harvest ~5 mi. N of Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage of Sampling Area size to be surveyed: 257 ac. Transect #: 24 Transect length: 1 mi.

GPS Start-point: 647423, 3739925, 212 Start time: 12:36 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 649030, 3739954, 200 End time: 13:05 am/pm  
(easting, northing, elevation in meters)

Start Temp: 33 °C End Temp: 34 °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 26 May 2011 Survey biologist(s): Matt Amalony, Matt.amalony@amcc.com, 9492332134  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest ~5 mi. N of Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kover Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ac. Transect #: 29 Transect length: 1 mi.

GPS Start-point: 649029, 3740004, 200 Start time: 13:15 am/pm am  
(easting, northing, elevation in meters)

GPS End-point: 647422, 3739975, 210 End time: 14:00 am/pm pm  
(easting, northing, elevation in meters)

Start Temp: 34 °C End Temp: 38 °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 26 May 2011 Survey biologist(s): Matt Amalony, matt.amalony@amec.com, 149 233 2134  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest ~5 mi. N of Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kayen Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ac. Transect #: 34W Transect length: 0.4 mi.

GPS Start-point: 647421, 3740025, 211 Start time: 14:07 am/pm (m)  
(easting, northing, elevation in meters)

GPS End-point: 648048, 3740036, 205 End time: 14:19 am/pm  
(easting, northing, elevation in meters)

Start Temp: 38 °C End Temp: 38 °C

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 27 May 2011 Survey biologist(s): Matt Amalony, matt.amalony@anec.com, 949-233-2134  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest ~5 mi N of Desert Center  
(project name and size, general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ac Transect #: 34E Transect length: 0.6 mi.

GPS Start-point: 648048, 3740036, 205 Start time: 7:45 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 649029, 3740054, 191 End time: 8:08 am/pm  
(easting, northing, elevation in meters)

Start Temp: 25 °C End Temp: 25 °C

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 27 May 2011 Survey biologist(s): Matt Amalona, matt.amalona@anec.com, 949-233-2134  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest ~5 mi. N of Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kawen Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ac. Transect #: 39 Transect length: 1 mi.

GPS Start-point: 649028, 3740104, 193 Start time: 8:22 (am/pm)  
(easting, northing, elevation in meters)

GPS End-point: 647420, 3740075, 208 End time: 8:57 (am/pm)  
(easting, northing, elevation in meters)

Start Temp: 25 °C End Temp: 28 °C

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 27 May 2011 Survey biologist(s): Matt Amalony, matt.amalony@amec.com, 949-233-2134  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest ~5 mi. N of Desert Center  
(project name and size, general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ac. Transect #: 600NW Transect length: 1.2 mi

GPS Start-point: 646835, 3740042, 218 Start time: 9:30 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 647919, 3741114, 207 End time: 10:00 am/pm  
(easting, northing, elevation in meters)

Start Temp: 29 °C End Temp: 30 °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 27 May 2011 Survey biologist(s): Matt Amalony, matt.amalony@arcc.com  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest ~5 mi. N of Desert Center  
(project name and size, general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ac. Transect #: 400NW Transect length: 1.03 mi.

GPS Start-point: 647971, 3740863, 206 Start time: 10:06 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 647027, 3740049, 216 End time: 10:30 am/pm  
(easting, northing, elevation in meters)

Start Temp: 30 °C End Temp: 31 °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 27 May 2011 Survey biologist(s): Matt Amalony, matt.amalony@amec.com, 949-233-2134  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest ~5 mi. N of Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ac. Transect # 200NW Transect length: 0.95 mi.

GPS Start-point: 647225, 3740058, 213 Start time: 10:37 am  
(easting, northing, elevation in meters)

GPS End-point: 648034, 3740499, 203 End time: 11:04 am  
(easting, northing, elevation in meters)

Start Temp: 31 °C End Temp: 32 °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 27 May 2011 Survey biologist(s): Matt Amalony, matt.amalony@amec.com, 949-233-2134  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest ~5 mi. N of Desert Center  
(project name and size, general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kawen Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ac. Transect #: 52 Transect length: 0.75 mi.

GPS Start-point: 617425, 3740204, 213 Start time: 12:09 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 648629, 3740227, 203 End time: 12:38 am/pm  
(easting, northing, elevation in meters)

Start Temp: 35 °C End Temp: 38 °C

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <i>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</i>	Approx MCL >160-mm? <i>(Yes, No, or Unknown)</i>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <i>(burrows, scats, carcass, etc)</i>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 27 May 2011 Survey biologist(s): Matt Analong, matt.analong@amec.com  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest ~5 mi. N of Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ac. Transect #: 55 Transect length: 0.75 mi.

GPS Start-point: 648627, 3740257, 203 Start time: 12:48 am/pm pm  
(easting, northing, elevation in meters)

GPS End-point: 647423, 3740237, 213 End time: 13:23 am/pm pm  
(easting, northing, elevation in meters)

Start Temp: 38 °C End Temp: 39 °C

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 27 May 2011 Survey biologist(s): Matt Amalony, matt.amalony@amec.com, 9492332134  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest ~5 mi. N of Desert Center  
(project name and size, general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kavea Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ac. Transect #: 58 Transect length: 0.75 mi

GPS Start-point: 647423, 3740264, 212 Start time: 13:27 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 648626, 3740287, 203 End time: 13:57 am/pm  
(easting, northing, elevation in meters)

Start Temp: 39 °C End Temp: 39 °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/26/2011 Survey biologist(s): Tsegaye Mengistu tmengist@yahoo.com (day, month, year) (name, email, and phone number) 414875-676

Site description: Desert Harvest Project North of Desert Center (Smk) (project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kasser Rd. (UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling: Area size to be surveyed: 257ha Transect #: 5 Transect length: 3/4mi

GPS Start-point: 0648097/3739744E 662 F Start time: 8:15  am/pm (easting, northing, elevation in meters)

GPS End-point: 649641/3739788 E618 F End time: 8:51  am/pm (easting, northing, elevation in meters)

Start Temp: 25 °C End Temp: 30 °C

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/27/2011 (day, month, year) Survey biologist(s): Eseyaie Menoistu Tmengistu@yahoo.com (name, email, and phone number) 714-875-69  
 Site description: Desert Harvest Project North of Desert center (Smith) (project name and size; general location)  
 County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd. (UTM coordinates, lat-long, and/or TRS; map datum)  
 Circle one:  100% coverage or  Sampling Area size to be surveyed: \_\_\_\_\_ Transect #: 40 Transect length: 1 mi  
 GPS Start-point: 649028/3740114 639<sup>ft</sup> Start time: 8:23  am/ pm  
(easting, northing, elevation in meters)  
 GPS End-point: 649028/3740095 690<sup>ft</sup> End time: 8:57  am/ pm  
(easting, northing, elevation in meters)  
 Start Temp: 25 °C 77<sup>F</sup> End Temp: 27 °C 79<sup>F</sup>

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 5/26/2011 Survey biologist(s): Tsegaye Mengistu tsegaye@yaho.com  
(day, month, year) (name, email, and phone number) 714-975-696

Site description: Desert Harvest Project North of Desert Center (5 miles)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257h Transect #: 10 Transect length: 1.5 mile

GPS Start-point: 0649625/3739839 618 ft Start time: 9:05 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647410/3739790 698 ft End time: 9:59 am/pm  
(easting, northing, elevation in meters)

Start Temp: 30 °C 86°F End Temp: 31 °C 88°F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 5/26/2011 Survey biologist(s): Teegaye Mengistu tmengist@yahoo.com  
(day, month, year) (name, email, and phone number) 714-875-69

Site description: Desert Harvest Project North of Desert Center (5mi)  
(project name and size, general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ha Transect #: 15 Transect length: 1.4 mi

GPS Start-point: 0644558/3620589.698ft Start time: 10:13  am /  pm  
(easting, northing, elevation in meters)

GPS End-point: 0649640/3739879.626ft End time: 11:07  am /  pm  
(easting, northing, elevation in meters)

Start Temp: 31 °C 88 °F End Temp: 92 °C 33 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/26/2011 Survey biologist(s): Tsegaye Mengistu tsegaye@yahoos.com  
(day, month, year) (name, email, and phone number) 714-895-6968

Site description: Desert Harvest Project North of Desert Center 6.5mi  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257ha Transect #: 20 Transect length: 1.4 mi

GPS Start-point: 0649639/3739924 626ft Start time: 11:24  am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647423/3739885 691ft End time: 12:29 am/pm  
(easting, northing, elevation in meters)

Start Temp: 32°C 90°F End Temp: 32°C 90°F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/26/2011 Survey biologist(s): Tsegaye Mengistie tsmengistie@yahoo.com  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project North of Desert Center (5mi)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257h Transect #: 25 Transect length: 1.0 mi

GPS Start-point: 0647423 / 3739975 691ft Start time: 12:36 am/pm

GPS End-point: 0640030 / 3739964 650ft End time: 13:05 am/pm

Start Temp: 32 °C 92 °F End Temp: 32 °C 93 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/26/2011 Survey biologist(s): Tsegaye Mengistu (mengistu@yahoo.com)  
(day, month, year) (name, email, and phone number) 714 875-6901

Site description: Desert Harvest Project North of Desert Center (5Mile)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ha Transect #: 35W Transect length: 0.4 mi

GPS Start-point: 647421/3740035 697 ft Start time: 2:08 am/pm

(easting, northing, elevation in meters)

GPS End-point: 648048/3740046 666 ft End time: 2:19 am/pm

(easting, northing, elevation in meters)

Start Temp: 38 °C 100 °F End Temp: 39 °C 104 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
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3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 5/27/2011 Survey biologist(s): tsegaye Mengistie tmengist@yahoo.com  
(day, month, year) (name, email, and phone number) 714-875-6968

Site description: Desert Harvest Project North of Desert Center (5 miles)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: \_\_\_\_\_ Transect #: 35E Transect length: .6 mi

GPS Start-point: 648048/3740046 668 ft Start time: 7:45 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 649028/3740064 636 ft End time: 8:08 am/pm  
(easting, northing, elevation in meters)

Start Temp: 29 °C 74 °F End Temp: 27 °C 77 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 5/27/2011 Survey biologist(s): Tsegaye Mengistu tmengist@yahoo.com  
(day, month, year) (name, email, and phone number) 714.875-6968

Site description: Desert Harvest Project North of Desert Center (5 mile)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: \_\_\_\_\_ Transect #: 4.2 Transect length: 0.75 mi

GPS Start-point: 6490486/374100 210M Start time: 9:15 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 6484629/374026 199M End time: 9:50 am/pm  
(easting, northing, elevation in meters)

Start Temp: 27 °C 83 °F End Temp: 28 °C 86 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1	<u>0647875</u>	<u>3740107</u>	<u>burrow C.5</u>	<u>good condition no recent use</u>
2	<u>06418363</u>	<u>3740109</u>	<u>burrow C.5</u>	<u>good condition possible PT</u>
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/27/2011 Survey biologist(s): Tsejane Mengistu tsmengist@yahoo.com  
(day, month, year) (name, email, and phone number) 714-871-169

Site description: Desert Harvest Project  
(project name and size; general location)

County: \_\_\_\_\_ Quad: \_\_\_\_\_ Location: Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: \_\_\_\_\_ Transect #: 46 Transect length: .75mi

GPS Start-point: 0897 4231 3740145 210m Start time: 10:40 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0649 6291 3740164 196m End time: 11:25 am/pm  
(easting, northing, elevation in meters)

Start Temp: 32 °C 89 °F End Temp: 31 °C 90

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/29/2011 Survey biologist(s): Treyase Mengistu tmenqirt@yahoo.com  
(day, month, year) (name, email, and phone number)

Site description: Desert harvest Project North of Desert Center (5 miles)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: \_\_\_\_\_ Transect #: 48 Transect length: 75m

GPS Start-point: 0648631/3740189 197m Start time: 11:15 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647424/3740163 209m End time: 12:04 am/pm  
(easting, northing, elevation in meters)

Start Temp: 32 °C 90°F End Temp: 35 °C 96°F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 5/27/2011 Survey biologist(s): tsegaye Mengistu tmengist@yahoo.com  
(day, month, year) (name, email, and phone number) 714-675-61

Site description: Desert Harvest Project North of Desert Center (5 miles)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Rasier Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: \_\_\_\_\_ Transect #: 44 Transect length: .75 mi

GPS Start-point: 0648630 / 3740148 199 m Start time: 9:45 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647423 / 3740131 210 m End time: 10:35 am/pm  
(easting, northing, elevation in meters)

Start Temp: 28 °C 86 °F End Temp: 32 °C 94 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/27/2011 Survey biologist(s): tsegaye Mengistu tmenjista@yahoo.com  
(day, month, year) (name, email, and phone number) 714-875-696

Site description: Desert Harvest Project North of Desert center 5mi  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: \_\_\_\_\_ Transect #: 50 Transect length: .75mi

GPS Start-point: 0647423/3740185 197M Start time: 12:15 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 064724/3740200 201M End time: 12:38 am/pm  
(easting, northing, elevation in meters)

Start Temp: 35 °C 96 °F End Temp: \_\_\_\_\_ °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/27/2011 Survey biologist(s): T. Begaye Mengistu (name, email, and phone number) tmengist@yahoo.com  
(day, month, year) 704-875-6968

Site description: Desert Harvest Project North of Desert Center (5 mil)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 1/7 ha Transect #: 5 Transect length: ~75m

GPS Start-point: 0648625/3740250 203 M Start time: 12:48 am/pm

(easting, northing, elevation in meters)

GPS End-point: 0647419/3740227 212 M End time: 1:25 am/pm

(easting, northing, elevation in meters)

Start Temp: 38 °C 100 °F End Temp: 39 °C 102 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
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3						
4						
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7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/29/2011 Survey biologist(s): Tsegaye Mengistu TMengist@yahoo.com  
(day, month, year) (name, email and phone number) 914 875-698

Site description: Desert harvest Project North of Desert center (5 mile)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Rainier Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 ha Transect #: 57 Transect length: 175 m

GPS Start-point: 0647418/3740258 212M Start time: 1:28 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0648611/3746282 203M End time: 1:58 am/pm  
(easting, northing, elevation in meters)

Start Temp: 39 °C 102 End Temp: 39 °C 101 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
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4						
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7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/27/2011 Survey biologist(s): Tsegaye Mengistu tsmengistu@yahoo.com  
(day, month, year) (name, email, and phone number) 714-877-6968

Site description: Desert Harvest Project North of Desert Center (5mils)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 217ha Transect #: 59 Transect length: 0.75

GPS Start-point: 0648630 / 3740297 670 ft Start time: 2:05 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647417 / 3740280 706 ft End time: 2:28 am/pm  
(easting, northing, elevation in meters)

Start Temp: 39 °C 101 °F End Temp: \_\_\_\_\_ °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/27/2011 Survey biologist(s): Tsegaye Mengistu Tsegaye @ yahoo.com  
(day, month, year) (name, email, and phone number) 714.875-6268

Site description: Desert Harvest Project North of Desert Center (5mi)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 217hect Transect #: 61 Transect length: 250mi

GPS Start-point: 0647422/3740302 706ft Start time: 2:40 am/pm

GPS End-point: 0647850/3740291 687ft End time: 2:50 am/pm

Start Temp: 37 °C 99 End Temp: 37 °C 99

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/27/2011 Survey biologist(s): Tsegaye Mengistu tmengistu@yahoo.com  
(day, month, year) (name, email, and phone number) 714-875-6968

Site description: Desert Harvest Project North of Desert Center (5mi)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257ha Transect #: 63 Transect length: ~2.5mi

GPS Start-point: 0647822 / 3740323 687ft Start time: 2:54 am/pm pm  
(easting, northing, elevation in meters)

GPS End-point: 06471427 / 3740320 760ft End time: 3:01 am/pm pm  
(easting, northing, elevation in meters)

Start Temp: 37 °C 99 °F End Temp: 37 °C 99 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/27/2011 Survey biologist(s): Tsegaye Mengistu emengiat@yahoo.com  
(day, month, year) (name, email, and phone number) 714-875-6962

Site description: Desert Harvest Project North of Desert Center (5mi)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 217 ha Transect #: 65 Transect length: 25 m

GPS Start-point: 0647420/3740340 700 Ft Start time: 3:08 am/pm (pm)  
(easting, northing, elevation in meters)

GPS End-point: 0647825/374348 686 Ft End time: 3:15 am/pm (pm)  
(easting, northing, elevation in meters)

Start Temp: 38 °C / 101 °F End Temp: 38 °C / 101 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/27/2011 Survey biologist(s): Tsegaye Mengistu tmengistie@yahoo.com  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project North of Desert center (5 miles)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Raiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 217 hec Transect #: 67 Transect length: 1.25 mi

GPS Start-point: 0647822/3740369/6865ft Start time: 3:20 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647424/3740358/6979ft End time: 3:27 am/pm  
(easting, northing, elevation in meters)

Start Temp: 35.6 °C 101.9 °F End Temp: 39 °C 103 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/27/2011 Survey biologist(s): Tsegaye Mengistu tmengistu@yahoo.com  
(day, month, year) (name, email, and phone number) 714-875-696

Site description: Desert Harvest Project North of Desert center (5 mi)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 217 ha Transect #: 69 Transect length: 2.25 mi

GPS Start-point: 0647423 / 3740381 697 ft Start time: 3:34 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647872 / 3740384 692 ft End time: 3:42 am/pm  
(easting, northing, elevation in meters)

Start Temp: 39 °C 103 °F End Temp: 39 °C 103 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/28/2011 Survey biologist(s): Uegaye Mengistu tmergist@yahoo.com  
(day, month, year) (name, email, and phone number) 714-8756968

Site description: Desert Harvest Project North of Desert Center (5mi)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Rainer Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 217 ha Transect #: 600E Transect length: 2 mi

GPS Start-point: 0648060/3739082 652 ft Start time: 6:07 am/pm walked 2mi  
(easting, northing, elevation in meters) up and 2mi

GPS End-point: 0648065/3739085 680 ft End time: 7:38 am/pm down on the  
(easting, northing, elevation in meters) same line

Start Temp: \_\_\_\_\_ °C 76 °F End Temp: \_\_\_\_\_ °C 78 °F

**Live Tortoises**

Detection number	GPS location Easting Northing	Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1					
2					
3					
4					
5					
6					
7					
8					

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing	Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1			
2			
3			
4			
5			
6			
7			
8			

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/28/2011 Survey biologist(s): Tsegaye Mengistu tmengist@yahoo.com  
(day, month, year) (name, email, and phone number) 714-875-6968

Site description: Desert Harvest Project North 3 Desert Center (5mi)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 217 hec Transect #: 71 Transect length: 2.25 mi

GPS Start-point: 0647828/3740403 668 ft Start time: 8:06 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647427/3740393 683 ft End time: 8:15 am/pm  
(easting, northing, elevation in meters)

Start Temp: \_\_\_\_\_ °C 83° F End Temp: \_\_\_\_\_ °C 83° F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
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**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/28/2011 Survey biologist(s): TSEGAYE Mengistu tmengist@yahoo.com  
(day, month, year) (name, email, and phone number) 714-875-6968

Site description: Desert Harvest Project North of Desert Center (5mi)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd. off.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 217ha Transect #: 73 Transect length: 25mi

GPS Start-point: 0647417/3740420 687ft Start time: 8:20 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647822/3740418 666ft End time: 8:27 am/pm  
(easting, northing, elevation in meters)

Start Temp: \_\_\_\_\_ °C 84°F End Temp: \_\_\_\_\_ °C 84°F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/28/2011 Survey biologist(s): Tsegaye Mengistu tmengistu@yahoo.com  
(day, month, year) (name, email, and phone number) 714-875-6968

Site description: Desert Harvest Project North of Desert Center (5 mi)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 217 ha Transect #: 75 Transect length: 0.25 mi

GPS Start-point: 0647821/3740444 664 ft Start time: 8:32 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647427/3740436 683 ft End time: 8:40 am/pm  
(easting, northing, elevation in meters)

Start Temp: \_\_\_\_\_ °C 89°F End Temp: \_\_\_\_\_ °C 85°F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 5/28/2011 Survey biologist(s): Tsegay Mengistu tmengist@yahoo.com  
(day, month, year) (name, email, and phone number) 714-875-6960

Site description: Desert Harvest Project North of Desert Center (5mi)  
(project name and size; general location)

County: River side Quad: \_\_\_\_\_ Location: Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 217hec Transect #: 77 Transect length: 0.25mi

GPS Start-point: 0647410 / 3740456 688ft Start time: 8:46 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647813 / 3740457 667ft End time: 8:54 am/pm  
(easting, northing, elevation in meters)

Start Temp: \_\_\_\_\_ °C 85°F End Temp: \_\_\_\_\_ °C 86°F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
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6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 5/28/2011 Survey biologist(s): Keqaye Mengistu tmengist@yahoo.com 714.875-6968  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project North of Desert center (5mi)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: off Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 217 ha Transect #: 79 Transect length: 0.25 mi

GPS Start-point: 0647820/3740482 670ft Start time: 8:59 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647424/3740482 689ft End time: 9:07 am/pm  
(easting, northing, elevation in meters)

Start Temp: \_\_\_\_\_ °C 87°F End Temp: \_\_\_\_\_ °C 87°F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/28/2011 Survey biologist(s): Tsegaye Mengistu tmenigist@yahoo.com  
(day, month, year) (name, email, and phone number) 714 975-6968

Site description: Desert Harvest Project North of Desert Center (5mi)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: off Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 2 1/2 hec Transect #: 4W Transect length: 0.38 mi

GPS Start-point: 0647416/3739727 685ft Start time: 10:34 (am/pm)

GPS End-point: 0648038/3739734 664ft End time: 10:50 (am/pm)

Start Temp: \_\_\_\_\_ °C 93°F End Temp: \_\_\_\_\_ °C 93°F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
WP=009 1	<u>0647989</u>	<u>3739732</u>	<u>burrow C=5</u>	<u>Class 5 Potential Burrow</u>
2				
3				
4				
5				
6				
7				
8				

Way Point K-008 = Crucifixion Worm

0647969  
3739746

Transect 4W

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/28/11 Survey biologist(s): Tsegaye Mengistu tmengist@yahoo.com  
(day, month, year) (name, email, and phone number) 714-875-6968

Site description: Desert Harvest Project North of Desert center (5mi)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: off Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 217/ha Transect #: 2w Transect length: 038 Mi

GPS Start-point: 0648038/3739717 667 ft Start time: 10:15 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0649407/3739709 684 ft End time: 10:25 am/pm  
(easting, northing, elevation in meters)

Start Temp: \_\_\_\_\_ °C 92 °F End Temp: \_\_\_\_\_ °C 91 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
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**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
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4				
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**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 5/26/2011 Survey biologist(s): Tsegaye Mengistu [tmengist@yahoo.com](mailto:tmengist@yahoo.com) 714-875-6968  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project North of Desert Center (5 mile)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257h Transect #: 30 Transect length: 1.0 mile

GPS Start-point: 649029 13740614 6243 Start time: 1:15 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 649422 13739985 6976 End time: 2:00 am/pm  
(easting, northing, elevation in meters)

Start Temp: 33 °C 93 °F End Temp: 38 °C 100 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 26/5/2011 Survey biologist(s): Nathan Moorhatch  
(day, month, year) (name, email, and phone number)

Site description: \_\_\_\_\_  
(project name and size; general location)

County: Riverside Co. Quad: \_\_\_\_\_ Location: 5 mi. N of Desert Center on Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 2 Transect length: \_\_\_\_\_

GPS Start-point: N 33.78735 W 115.40078 662 ft. Start time: 0815 (am)pm  
(easting, northing, elevation in meters)

GPS End-point: N 33.78728 W 115.38368 618 ft. End time: 0851 (am)pm  
(easting, northing, elevation in meters)

Start Temp: 25 °C End Temp: 86 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

*Callisaurus dracon.*

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 26/5/2011 Survey biologist(s): Nathan Moorhous  
(day, month, year) (name, email, and phone number)

Site description: \_\_\_\_\_  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: 5 mi. N. of Desert Center on Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 7 Transect length: 1.4 mi.

GPS Start-point: N 33.78773 W 115.38369 Start time: 0905 (am/pm)

GPS End-point: N 33.78769 W 115.40761 212m End time: 1000 (am/pm)  
(easting, northing, elevation in meters) (easting, northing, elevation in meters)

Start Temp: 86 °F End Temp: 88 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

*Aspidoscelis tigris*  
 Verdin  
*Spermophilis tereticauda*  
 Ash-throated Flycatcher

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 26/5/2011 Survey biologist(s): Nathan Moorhatch  
(day, month, year) (name, email, and phone number)

Site description: \_\_\_\_\_  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: ~5 mi. N. of Desert Center on Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: (100% coverage) or Sampling Area size to be surveyed: 257 acres Transect #: 12 Transect length: \_\_\_\_\_

GPS Start-point: N 33.78814° W 115.40761° Start time: 10:13 am/pm  
(easting, northing, elevation in meters)

GPS End-point: N 33.78818° W 115.38369 626ft. End time: 11:07 am/pm  
(easting, northing, elevation in meters)

Start Temp: 88 °F End Temp: 92 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

*Common Raven*

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 26/5/2011 Survey biologist(s): Nathan Moorhatch  
(day, month, year) (name, email, and phone number)

Site description: \_\_\_\_\_  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: ~5 mi. N. of Desert Center  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 357 acres Transect #: 17 Transect length: 1.37 mi

GPS Start-point: N 33.78863 W 115.38369° 191m Start time: 11:24 am  
(easting, northing, elevation in meters)

GPS End-point: N 33.78856° W 115.40755° 210m End time: 12:29 am  
(easting, northing, elevation in meters)

Start Temp: 92 °F End Temp: 92 °F

} - 15 min. for lunch

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

Desert Iguana

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 26/5/2011 Survey biologist(s): Nathan Moorhake  
(day, month, year) (name, email, and phone number)

Site description: \_\_\_\_\_  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: ~5 mi N. of Desert Center  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 22 Transect length: \_\_\_\_\_

GPS Start-point: N 33.78903° W 115.40763° Start time: 12:36 am/pm  
(easting, northing, elevation in meters)

GPS End-point: N 33.78912° W 115.39024° 197 m End time: 13:05 am/pm  
(easting, northing, elevation in meters)

Start Temp: 92 °F End Temp: 93 °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

*Lepus cal.*

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 26/5/2011 Survey biologist(s): Nathan Moorhates  
(day, month, year) (name, email, and phone number)

Site description: \_\_\_\_\_  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: 5 mi. N. of Desert Center  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 27 Transect length: 1.0 mi

GPS Start-point: N 33.78952° W 115.39025° 649 ft. Start time: 13:15 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0647422 373 9957 210 m End time: 14:00 am/pm  
(easting, northing, elevation in meters)

Start Temp: 93 °F End Temp: 100 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 26/5/2011 Survey biologist(s): Nathan Moorhach  
(day, month, year) (name, email, and phone number)

Site description: \_\_\_\_\_  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: 5 mi. N. of Desert Center  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 25 Acres Transect #: 32 Transect length: \_\_\_\_\_

GPS Start-point: 115 0647421 3740005 Start time: 14:08 am/pm  
(easting, northing, elevation in meters)

GPS End-point: \_\_\_\_\_ End time: 14:23 am/pm  
(easting, northing, elevation in meters)

Start Temp: 100 °F End Temp: 101 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 27/5/2011 Survey biologist(s): Nathan Moorhous  
(day, month, year) (name, email, and phone number)

Site description: \_\_\_\_\_  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: 5 mi. N. of Desert Center on Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 32E Transect length: 0.6 mi.

GPS Start-point: 115 0648049 3748014 666ft. Start time: 0745 (am/pm)

GPS End-point: 115 0649033 3740035 633ft. End time: 0809 (am/pm)

Start Temp: 74 °F End Temp: 77 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

*Chionactis (tracks)  
 WWDO*

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 27/5/2011 Survey biologist(s): Nathan Moorhous  
(day, month, year) (name, email, and phone number)

Site description: \_\_\_\_\_  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: 5 mi. N. of Desert Center  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 37 Transect length: 1.0 mi

GPS Start-point: 115 0649028 3740084 Start time: 0823 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0647421 3740054 End time: 0857 am/pm  
(easting, northing, elevation in meters)

Start Temp: 77 °C End Temp: 83 °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

BTGN  
LBWD

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 27/5/2011 Survey biologist(s): Nathan Moorhatch  
(day, month, year) (name, email, and phone number)

Site description: Gravelly/Rocky washes & bajadas dominated by Ironwood, Blue Palo Verde, creosote outside washes  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: 5 mi. N. of Desert Center  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 600SW Transect length: 1.20 mi.

GPS Start-point: 115 064 635 374 0044 218m Start time: 0930 am  
(easting, northing, elevation in meters)

GPS End-point: 115 064 804 373 9122 End time: 1015 am  
(easting, northing, elevation in meters)

Start Temp: 84 °F End Temp: 86 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

ATFL  
LENH  
BTGN  
VERD  
TUVU

*Aspidozelis t. tigris*  
*Spermophilis tereticaudus*  
*Dipsosaurus dorsalis*  
*Callisaurus draconoides*

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 27/5/2011 Survey biologist(s): Nathan Moorhatch  
(day, month, year) (name, email, and phone number)

Site description: Gravelly/rocky washes & bajadas dominated by Ironwood, Blue Palo Verde w/ creosote outside washes  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: 5 mi. N of Desert Center  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 4005W Transect length: 0.98 mi

GPS Start-point: 115 0648045 3739306 Start time: 10:20 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0647034 3740041 End time: 10:50 am/pm  
(easting, northing, elevation in meters)

Start Temp: 67 °C/F End Temp: 98 °C/F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

VERD

*Spermophilis tereticaudus*  
*Dipsosaurus dorsalis*  
*Lepus californicus*

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 27/5/2011 Survey biologist(s): Nathan Moorhatch  
(day, month, year) (name, email, and phone number)

Site description: Gravelly/rocky washes & bajadas dominated by Creosote, Catclaw, & Palo Verde, Creosote scrublands  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: 5 mi. N. of Desert Center  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 2.57 acres Transect #: 200SW Transect length: 0.82 mi

GPS Start-point: 115 064 7230 3740054 Start time: 10:55 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 115 064 8050 3739508 End time: 11:17 am/pm  
(easting, northing, elevation in meters)

Start Temp: 88 °F End Temp: 90 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

*Spermophilis tereticaudus*  
*Piposaurus dorsalis*  
 BTGN

Page: \_\_\_\_\_ of \_\_\_\_\_

Transect number: 200 SW  
(201)

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 27/5/2011 Survey biologist(s): Nathan Moorhatch  
(day, month, year) (name, email, and phone number)

Site description: \_\_\_\_\_  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: 5 mi. N. of Desert Center on Kaiser Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: (100% coverage) or Sampling Area size to be surveyed: 257 acres Transect #: 51 Transect length: 0.75 mi.

GPS Start-point: 115 0647424 3740196 Start time: 12:10 am  
(easting, northing, elevation in meters)

GPS End-point: 115 0648628 3740213 203 m End time: 12:38 am  
(easting, northing, elevation in meters)

Start Temp: 96 °F End Temp: 100 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1	<u>115 0648497</u>	<u>3740212</u>	<u>Class 5 Burrow</u>	<u>4 1/2 in. H. x ~ 6 in. Wide (Mike's Pic's - no scale)</u>
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 27/5/2011 Survey biologist(s): Nathan Moorhatch  
(day, month, year) (name, email, and phone number)

Site description: \_\_\_\_\_  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: 5 mi. N. of Desert Center  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 53 Transect length: 0.75 mi

GPS Start-point: 115 0648627 3740237 Start time: 12:48 am  
(easting, northing, elevation in meters) (pm)

GPS End-point: 115 0647422 3740214 End time: 13:23 am  
(easting, northing, elevation in meters) (pm)

Start Temp: 100 °F End Temp: 102 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 27/5/2011 Survey biologist(s): Nathan Moorhatch  
(day, month, year) (name, email, and phone number)

Site description: \_\_\_\_\_  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: 5 mi. N. of Desert Center  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 56 Transect length: 0.75 mi

GPS Start-point: 115 647422 3740247 212m Start time: 13:28 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0648627 3740267 203m End time: 13:57 am/pm  
(easting, northing, elevation in meters)

Start Temp: 102 °F End Temp: 101 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 26, 2011 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project north of Desert Center (5 mi N)  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Road - south end of parcel  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one  100% coverage or  Sampling Area size to be surveyed: 257 acres Transect #: 1 Transect length: 3/4 mi

GPS Start-point: 115 0648040 / 3739704 662 ft Start time: 8:15  am /  pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0649642 / 3739735 618 ft End time: 8:51  am /  pm  
(easting, northing, elevation in meters)

Start Temp: 25 °C (77°F) End Temp: 86 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1		<u>None</u>				
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1	<u>115 0649198</u>	<u>3739724</u>	<u>Potential DT burrow</u>	<u>Class 5 (good - pot. burrow) WSP003 Photo 1</u>
2				
3				
4				
5				
6				
7				
8				

Low-tailed GS  
kit fox tracks



**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 26, 2011 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Hawk Project north of Desert Center (CA 11)  
(project name and size; general location) near south end

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Road of parcel  
(UTM coordinates, lat-long, and/or TRS, map datum)

Circle one:  100% coverage or  Sampling Area size to be surveyed: 257 aces Transect #: 6 Transect length: 1.4 mi

GPS Start-point: 115 0649646 / 3739784 618 ft Start time: 9:05  am /  pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0647428 / 3739745 695 ft End time: 10:00  am /  pm  
(easting, northing, elevation in meters)

Start Temp: 86 °F End Temp: 88 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1		<u>None</u>				
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1		<u>None</u>		
2				
3				
4				
5				
6				
7				
8				

*Zebra-tailed lizard  
 ash-throated flycatcher  
 round-tailed ground squirrel  
 crucifix thorn WIP check 115 0647967  
 (1 plant) 3739747 Photo 2*

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: May 26, 2011 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Road area - Near south end of parcel  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 11 Transect length: 1.9 mi

GPS Start-point: 1150647427 / 3739798 692ft Start time: 10:13  am  pm  
(easting, northing, elevation in meters)

GPS End-point: 1150649641 / 3739835 626ft End time: 11:07  am  pm  
(easting, northing, elevation in meters)

Start Temp: 88 °F End Temp: 92 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1		<u>None</u>				
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1		<u>None</u>		
2				
3				
4				
5				
6				
7				
8				

RTGS  
Ash-throated Flycatcher  
zebra-tailed

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 26, 2011 Survey biologist(s): Ted Rando  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd area - <sup>near south end of</sup> road  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 16 Transect length: 1.4 mi

GPS Start-point: 1150649640 / 3739884 619ft Start time: 11:27 am pm  
(easting, northing, elevation in meters)

GPS End-point: 1150647746 / 3739845 691ft End time: 12:29 am pm  
(easting, northing, elevation in meters)

Start Temp: 92 °F End Temp: 92 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160 mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1		<u>None</u>				
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1		<u>None</u>		
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 26, 2011 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Centre  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Road Area - southern portion of parcel  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 Acres Transect #: 21 Transect length: 1.00 mi

GPS Start-point: 115 0647423 / 3739895 694 ft Start time: 12:36 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0649034 / 3739923 649 ft End time: 13:05 am/pm  
(easting, northing, elevation in meters)

Start Temp: 92 °F End Temp: 93 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1		<u>None</u>				
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1		<u>None</u>		
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 26, 2011 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd Area - Southern portion of parcel  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 Ac. Transect #: 26 Transect length: 1.0 MI

GPS Start-point: 115 6649029 / 3739973 649 ft Start time: 1:15 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0647421 / 3739945 676 ft End time: 2:00 am/pm  
(easting, northing, elevation in meters)

Start Temp: 95 °F End Temp: 100 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160 mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1		<u>None</u>				
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1		<u>None</u>		
2				
3				
4				
5				
6				
7				
8				

*black-tailed jackrabbit  
 desert iguana  
 western whiptail*

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: May 26, 2010 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Doat Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Kaiser Rd Area - south of patch  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 Ac Transect #: 31 Transect length: 0.4 miles

GPS Start-point: 11S 0647420 / 3739995 696 Ft Start time: 2:08 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 11S 0648051 / 3740025 End time: 2:19 PM am/pm  
(easting, northing, elevation in meters)

Start Temp: 100 °F End Temp: 100 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1	<u>None</u>					
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	<u>None</u>			
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: May 27, 2011 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 Mi. N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: off Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 31E Transect length: 0.84 mi

GPS Start-point: 115 6648051 / 3740085 666 ft Start time: 7:45 AM (am/pm)

GPS End-point: 118 0679029 / 3740025 633 ft End time: 8:08 (am/pm)

Start Temp: 77 °F End Temp: 77 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

*Shovel-mound snake tracks*

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 27, 2011 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size, general location)

County: Riverside Quad: \_\_\_\_\_ Location: Off Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 36 Transect length: 1.00 mi

GPS Start-point: 115 0649028 / 3740095 639 ft Start time: 8:20  am  pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0647425 / 3740042 690 ft End time: 8:57  am  pm  
(easting, northing, elevation in meters)

Start Temp: 77 °F End Temp: 83 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1		<u>None</u>				
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1		<u>None</u>		
2				
3				
4				
5				
6				
7				
8				

*Slack-tailed grackles*

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 27, 2011 Survey biologist(s): Ted Kudo  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: off Kaiser Rd Buffer 200E  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one:  100% coverage or  Sampling Area size to be surveyed: 257 acres Transect #: B200E Transect length: 2.5 mi

GPS Start-point: 115 064 060 / 3739305 672 ft Start time: 9:30  am  pm

GPS End-point: 118 064 035 / 3740503 667 ft End time: 10:46  am  pm

Start Temp: 84 °F End Temp: 93 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1	<u>None</u>					
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	<u>None</u>			
2				
3				
4				
5				
6				
7				
8				

*desert iguana zebra-tailed lizard  
whiptail  
RTGS  
ash-throated flycatcher*

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 27, 2011 Survey biologist(s): TCJ Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: off Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 400E Transect length: ± 3.25 mi

GPS Start-point: N 33.78356 / W -115.40084 Start time: 11:55  am /  pm  
(easting, northing, elevation in meters)

GPS End-point: N 33.79774 / W -115.40173 End time: 1:20 am /  pm  
(easting, northing, elevation in meters)

Start Temp: 94 °F End Temp: 98 °F

**Live Tortoises**

Detection number	GPS location Easting Northing	Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1	<u>None</u>				
2					
3					
4					
5					
6					
7					
8					

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing	Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	<u>10478</u> <u>11-115.39073</u>	<u>Class 5 Burrow</u>	<u>Pot. Burrow for DT. Good condition - no sign. 6" W x 4" H x 10" L WPOD. Single photo</u>



**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: May 28, 2011 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: off Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 600E Transect length: 2

GPS Start-point: 115 0647937 / 3741075 652 ft Start time: 6:09 (am) pm

GPS End-point: 115 0648066 / 3739091 658 ft End time: 7:38 (am) pm

Start Temp: 76 °F End Temp: 78 °F

**Live Tortoises**

Detection number	GPS location Easting Northing	Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1	<u>None</u>				
2					
3					
4					
5					
6					
7					
8					

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing	Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1	<u>None</u>		
2			
3			
4			
5			
6			
7			
8			

*NOTE: Long transect divided into 2 segments  
 I walked the "northern" heading east for about 2 miles, starting at the junction w/ Kaiser Road. Then walked out with the other biologist (Siguy), ending at Kaiser Road at the intersection of the "southern" segment.*

Page: 1 of 1

Transect number: 600E  
201

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 27, 2011 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: off Kairo Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 60 Transect length: 0.75 mi

GPS Start-point: 115 0648629 / 3740305 670ft Start time: 2:05 am/pm pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0647423 / 3740285 706F End time: 2:28 am/pm pm  
(easting, northing, elevation in meters)

Start Temp: 101 °F End Temp: 99 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1		<u>None</u>				
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1		<u>None</u>		
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: May 27, 2011 Survey biologist(s): Ted Kato  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Off Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 62 Transect length: 0.25

GPS Start-point: 11S 0647423 / 3740307 706 ft Start time: 2:40 am/pm am  
(easting, northing, elevation in meters)

GPS End-point: 11S 0647823 / 3740313 687 ft End time: 2:50 am/pm pm  
(easting, northing, elevation in meters)

Start Temp: 99 °F End Temp: 99 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1		<u>None</u>				
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1		<u>None</u>		
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: May 27, 2011 Survey biologist(s): Ted Kudo  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: off Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 64 Transect length: 0.25 mi

GPS Start-point: 115 064 7825 / 3740333 687ft Start time: 2:57 am/pm pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0647 423 / 37410325 700ft End time: 3:01 am/pm pm  
(easting, northing, elevation in meters)

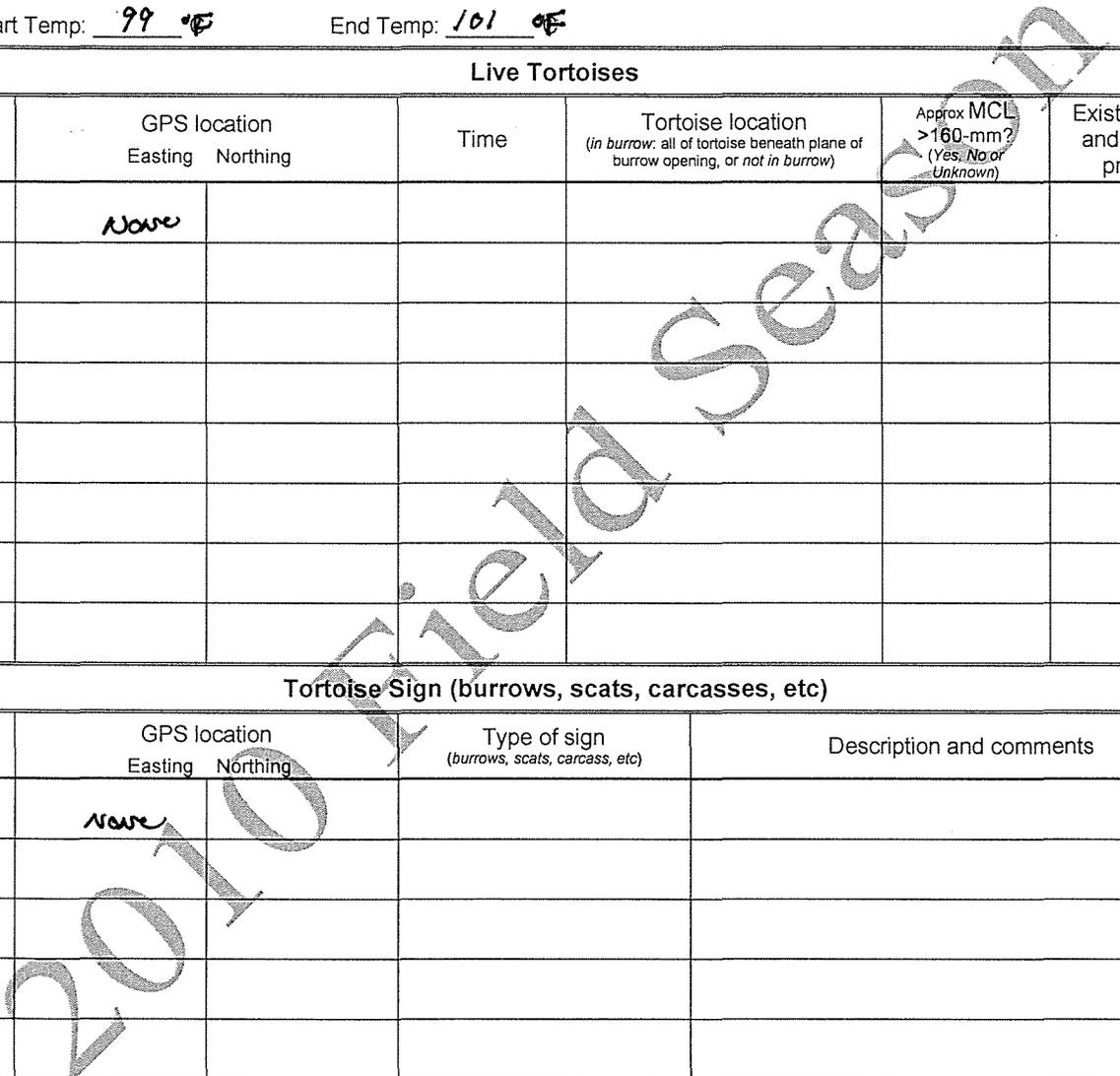
Start Temp: 99 °F End Temp: 101 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1	<u>None</u>					
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	<u>None</u>			
2				
3				
4				
5				
6				
7				
8				



**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: May 27, 2011 Survey biologist(s): Ted Kado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: off Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 66 Transect length: 0.25 mi

GPS Start-point: 115 6647422 / 3740346 700ft Start time: 3:08 am/pm pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0647826 / 3740353 686ft End time: 3:15 am/pm pm  
(easting, northing, elevation in meters)

Start Temp: 101 °F End Temp: 101 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1		<u>None</u>				
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1		<u>None</u>		
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 27, 2011 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Off Kawai Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one 100% coverage or Sampling Area size to be surveyed: \_\_\_\_\_ Transect #: 68 Transect length: 0.25

GPS Start-point: 115 0847826 / 3740377 686 ft Start time: 3:20 am pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0647421 / 3740368 697 ft End time: 3:27 am pm  
(easting, northing, elevation in meters)

Start Temp: 101 °F End Temp: 103 °F

**Live Tortoises**

Detection number	GPS location Easting Northing	Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
1	<u>None</u>				
2					
3					
4					
5					
6					
7					
8					

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing	Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1	<u>None</u>		
2			
3			
4			
5			
6			
7			
8			

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Contr  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Off Kawai Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one  100% coverage or Sampling Area size to be surveyed: 257 ac. Transect #: 70 Transect length: 0.25 mi

GPS Start-point: 115 0647423 / 3740386 697 ft Start time: 3:54 am/pm

(easting, northing, elevation in meters)

GPS End-point: 115 0647824 / 3740394 692 ft End time: 3:42 am/pm

(easting, northing, elevation in meters)

Start Temp: 103 °F End Temp: 103 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1	<u>None</u>					
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	<u>None</u>			
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: May 28, 2011 Survey biologist(s): Ted Roub  
(day, month, year) (name, email, and phone number)

Site description: Desert Hot Springs 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Off Kalm Rd.  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one:  100% coverage or  Sampling Area size to be surveyed: 257 acres Transect #: 72 Transect length: 0.25 mi

GPS Start-point: 115 0647824 / 3740413 668 ft Start time: 8:06  am  pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0647425 / 3740408 683 ft End time: 8:15  am  pm  
(easting, northing, elevation in meters)

Start Temp: 83 °F End Temp: 83 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1	<u>None</u>					
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	<u>None</u>			
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: May 28, 2011 Survey biologist(s): Ted Rando  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 Mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Off Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one  100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 74 Transect length: 0.25 mi

GPS Start-point: 1150647423 / 3740426 687-ft Start time: 8:20  am  pm  
(easting, northing, elevation in meters)

GPS End-point: 1150647825 / 3740480 666-ft End time: 8:27  am  pm  
(easting, northing, elevation in meters)

Start Temp: 83 °F End Temp: 83 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1	<u>None</u>					
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	<u>None</u>			
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 28, 2011 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: off kays rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one:  100% coverage or  Sampling Area size to be surveyed: 257 acres Transect #: 76 Transect length: 0.25 mi

GPS Start-point: 118 0647821 / 3740451 664 ft Start time: 8:32  am  pm  
(easting, northing, elevation in meters)

GPS End-point: 118 0647821 / 3740447 683 ft End time: 9:39  am  pm  
(easting, northing, elevation in meters)

Start Temp: 82 °F End Temp: 85 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1	<u>None</u>					
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	<u>None</u>			
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 28, 2011 Survey biologist(s): Tej Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: off Kaiser Road  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 78 Transect length: 0.25 mi

GPS Start-point: 118 0647422 / 3740467 688ft Start time: 8:46  am  pm  
(easting, northing, elevation in meters)

GPS End-point: 113 0647824 / 3740473 667ft End time: 8:54  am  pm  
(easting, northing, elevation in meters)

Start Temp: 85 °F End Temp: 85 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1	<u>None</u>					
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	<u>None</u>			
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 28, 2011 Survey biologist(s): Tej Raulo  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: Off Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 80 Transect length: 0.25 mi

GPS Start-point: 1150647822 / 3740494 670 ft Start time: 8:58  am  pm  
(easting, northing, elevation in meters)

GPS End-point: 1150647427 / 3740486 684 ft End time: 9:06  am  pm  
(easting, northing, elevation in meters)

Start Temp: 87 °F End Temp: 87 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1	<u>None</u>					
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	<u>None</u>			
2				
3				
4				
5				
6				
7				
8				

NOTE: Took photo of NE corner boundary stake

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 28, 2011 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size, general location)

County: Riverside Quad: \_\_\_\_\_ Location: off Kairu Rd  
(UTM coordinates, lat-long, and/or TRS, map datum)

Circle one  100% coverage or  Sampling Area size to be surveyed: \_\_\_\_\_ Transect #: 10W Transect length: 0.38 mi

GPS Start-point: 115 064737 / 3739795664 ft Start time: 9:40  am  pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0647426 / 3739783 686 ft End time: 9:54  am  pm  
(easting, northing, elevation in meters)

Start Temp: 91 °F End Temp: 92 °F

**Live Tortoises**

Detection number	GPS location Easting Northing	Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1	<u>None</u>				
2					
3					
4					
5					
6					
7					
8					

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing	Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1	<u>1150647841 3739800</u>	<u>class 5 burrow</u>	<u>Fair condition - no signs - possibly DT Photo taken WP006</u>



**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 20, 2011 Survey biologist(s): Ted Rado  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project 6 mi N Desert Center  
(project name and size; general location)

County: Riverside Quad: \_\_\_\_\_ Location: off Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one  100% coverage for Sampling Area size to be surveyed: 257 acres Transect #: 1W Transect length: 0.38 mi

GPS Start-point: 1150648042 / 3739706 666 ft Start time: 10:15  am  pm  
(easting, northing, elevation in meters)

GPS End-point: 1150647427 / 3739697 684 ft End time: 10:25  am  pm  
(easting, northing, elevation in meters)

Start Temp: 92 °F End Temp: 92 °F

**Live Tortoises**

Detection number	GPS location Easting Northing	Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1	<u>None</u>				
2					
3					
4					
5					
6					
7					
8					

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing	Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1	<u>None</u>		
2			
3			
4			
5			
6			
7			
8			

NOTE: 2 crucifixion thorns just south of boundary. WPO10  
 1150647981 / 3739660  
 photo

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 28, 2011 Survey biologist(s): Ted Rowe  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project  
(project name and size; general location)

County: Kivisive Quad: \_\_\_\_\_ Location: off Kaiser Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 acres Transect #: 3W Transect length: 0.38 mi

GPS Start-point: 115 0647425 / 373918 685 ft Start time: 10:34 (am) pm  
(easting, northing, elevation in meters)

GPS End-point: 115 0648041 / 3739729 664 ft End time: 10:50 (am) pm  
(easting, northing, elevation in meters)

Start Temp: 93 °F End Temp: 93 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				

WP 608 - 1 cross-taxon thorn  
 115 0647969  
 3739746 (Transect 4W)  
 1 Photo

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: May 28, 2011 Survey biologist(s): Ted Rao + Tsegaye Mengistu  
(day, month, year) (name, email, and phone number)

Site description: Desert Harvest Project  
(project name and size; general location)

County: Livestock Quad: \_\_\_\_\_ Location: off Kaslo Rd  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: \_\_\_\_\_ Transect #: 5W Transect length: 0.38

GPS Start-point: 1150648637 / 3739745 663ft Start time: 11:02 am pm  
(easting, northing, elevation in meters)

GPS End-point: 11506477427 / 3739736 684ft End time: 11:13 am pm  
(easting, northing, elevation in meters)

Start Temp: 93 °F End Temp: 93 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1	<u>None</u>					
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1	<u>None</u>			
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 26 MAY 11 Survey biologist(s): michael.wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARBEST, 257 ACRES, ~ 5 mi N DESERT CTR.  
(project name and size, general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS RISE S 26 27  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 AC. Transect #: 3 Transect length: 1.5 mi

GPS Start-point: N33.78735°, W115.40079, 662' Start time: 0815 am/pm  
(easting, northing, elevation in meters)

GPS End-point: N33.78735, W115.38367, 618' End time: 0851 am/pm  
(easting, northing, elevation in meters)

Start Temp: 80 °F End Temp: 86 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes: No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 26 MAY 11 Survey biologist(s): michael.wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARVEST, 257 ACRES, ~ 5 mi N DESERT CRT.  
(project name and size, general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS RISE S 26427  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 AC. Transect #: 8 Transect length: 1.5 mi

GPS Start-point: N33.78783°, W115.38370°, 695' Start time: 0900 am/pm  
(easting, northing, elevation in meters)

GPS End-point: N33.78783°, W115.40759°, 695' End time: 1000 am/pm  
(easting, northing, elevation in meters)

Start Temp: 86 °F End Temp: 88 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

2010 Field Search

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 26 MAY 11 Survey biologist(s): michael.wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARVEST, 257 ACRES, ~ 5 mi N DESERT CTR.  
(project name and size, general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS RISE S 26 27  
(UTM coordinates, lat-long, and/or TRS, map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 AC. Transect #: 13 Transect length: 1.5 mi

GPS Start-point: N33.78825°, W115.40764°, 615' Start time: 1013 am/pm  
(easting, northing, elevation in meters)

GPS End-point: N33.78825°, W115.38358°, 626' End time: 1107 am/pm  
(easting, northing, elevation in meters)

Start Temp: 88 °F End Temp: 92 °F

**Live Tortoises**

Detection number	GPS location Easting Northing		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location Easting Northing		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
1	<u>W115.38881°</u>	<u>N33.78827°</u>	<u>POTENTIAL DT BURROW</u>	<u>CLASS 5, ASSOCIATED W/ LARGE SMALL MANUAL BURROW COMPLEX (GPS PT. "ROTBI")</u>
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 26 MAY 11 Survey biologist(s): michael.wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARVEST, 257 ACRES, ~5 mi N DESERT CTR.  
(project name and size, general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS RISE S 26 27  
(UTM coordinates, lat-long, and/or TRS, map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 AC. Transect #: 18 Transect length: 1.4 mi

GPS Start-point: 0649638, 3739904, 619' Start time: 11:24 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647424, 3739865, 691' End time: 12:29 am/pm  
(easting, northing, elevation in meters)

Start Temp: 92 °F End Temp: 92 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
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**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 26 MAY 11 Survey biologist(s): michael.wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARBEST, 257 ACRES, ~ 5 mi N DESERT CTR.  
(project name and size, general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS RISE S 26 27  
(UTM coordinates, lat-long, and/or TRS, map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 AC. Transect #: 23 Transect length: 1 mi

GPS Start-point: 0649030, 3739943, 691' Start time: 12:36 am/pm am  
(easting, northing, elevation in meters)

GPS End-point: 0647423, 3739915, 650' End time: 1:03 am/pm am  
(easting, northing, elevation in meters)

Start Temp: 92 °F End Temp: 93 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 26 MAY 11 Survey biologist(s): michael.wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARBEST, 257 ACRES, ~ 5 mi N DESERT CRT.  
(project name and size, general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS, RISE S 26427  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257AC. Transect #: 28 Transect length: 1mi

GPS Start-point: 0649030, 3739993, 649' Start time: 1:15 am/pm am  
(easting, northing, elevation in meters)

GPS End-point: 0647422, 3739965, 697' End time: 2:00 am/pm am  
(easting, northing, elevation in meters)

Start Temp: 93 °F End Temp: 100 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
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7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 26 MAY 11 Survey biologist(s): michael.wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARVEST, 257 ACRES, ~ 5 mi N DESERT CTR.  
(project name and size, general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS RISE S 26 27  
(UTM coordinates, lat-long, and/or TRS, map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 AC. Transect #: 33w Transect length: 0.4 mi

GPS Start-point: 0647421, 3740015, 697' Start time: 2:08 am/pm pm  
(easting, northing, elevation in meters)

GPS End-point: 0648048, 3740027 End time: 2:30 am/pm pm  
(easting, northing, elevation in meters)

Start Temp: 100 °F End Temp: 100 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
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**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 27 MAY 11 Survey biologist(s): Michael.Wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARVEST, 257 ACRES, ~ 5 mi N DESERT CRT.  
(project name and size, general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS RISE S 26 27  
(UTM coordinates, lat-long, and/or TRS, map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 AC. Transect #: 33E transect length: .6 mi

GPS Start-point: 0648047, 3740026, 666' Start time: 7:45 @ am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0649028, 3740043, 633' End time: 8:08 @ am/pm  
(easting, northing, elevation in meters)

Start Temp: 74 °F End Temp: 77 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 27 MAY 11 Survey biologist(s): michael.wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARVEST, 257 ACRES, ~ 5 mi N DESERT CTR.  
(project name and size, general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS RISE S 26 27  
(UTM coordinates, lat-long, and/or TRS, map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 AC. Transect #: 38 Transect length: 1 mi

GPS Start-point: 0649028, 3740093, 637' Start time: 8:20 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647423, 3740065, 690' End time: 8:57 am/pm  
(easting, northing, elevation in meters)

Start Temp: 77 °F End Temp: 83 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 27 MAY 11 Survey biologist(s): michael.wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARVEST, 257 ACRES, ~ 5 mi N DESERT CTR.  
(project name and size, general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS RISE S 26 27  
(UTM coordinates, lat-long, and/or TRS, map datum)

Circle one:  100% coverage or  Sampling Area size to be surveyed: 257AC. Transect #: 41 Transect length: .75mi

GPS Start-point: 0647420, 3740095, 210M. Start time: 9:15  am  pm  
(easting, northing, elevation in meters)

GPS End-point: 0648628, 3740016, 199M. End time: 9:50  am  pm  
(easting, northing, elevation in meters)

Start Temp: \_\_\_\_\_ °C End Temp: \_\_\_\_\_ °C

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4						
5						
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**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
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**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 27 MAY 11 Survey biologist(s): michael.wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARVEST, 257 ACRES, ~ 5 mi N DESERT CTR.  
(project name and size, general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS RISE S 26 27  
(UTM coordinates, lat-long, and/or TRS, map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 AC. Transect #: 43 Transect length: .75 mi

GPS Start-point: 0648630, 3740138 Start time: 9:55 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647423, 3740116, 210 m. End time: 10:35 am/pm  
(easting, northing, elevation in meters)

Start Temp: 86 °F End Temp: 89 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
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3						
4						
5						
6						
7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 27 MAY 11 Survey biologist(s): Michael.wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARBEST, 257 ACRES, ~ 5 mi N DESERT. CTR.  
(project name and size, general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS RISE S 26 27  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 AC. Transect #: 45 Transect length: 75 mi

GPS Start-point: 0647423, 3740135, 210 M. Start time: 10:40 am  
(easting, northing, elevation in meters)

GPS End-point: 0648629, 3740157, 197 M. End time: 11:05 am  
(easting, northing, elevation in meters)

Start Temp: 89 °F End Temp: 90 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL > 160-mm? <small>(Yes, No, or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
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**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	<u>0647814</u>	<u>3740141</u>	<u>BURROW (PAUET ~12" d)</u>	<u>CLASS 5, POSS. DT, GOOD COND. ~7" W X 3" T X 12" d "DTB CLASS 5" 2 PICS GPS SIDE</u>
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 27 MAY 11 Survey biologist(s): michael.wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARVEST, 257 ACRES, ~ 5 mi N DESERT CTR.  
(project name and size; general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS, RISE S 26 4 27  
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 AC. Transect #: 47 Transect length: .75 mi

GPS Start-point: 0648628, 3740176, 197m. Start time: 11:15 am/pm  
(easting, northing, elevation in meters)

GPS End-point: 0647425, 3740155, 209m. End time: 12:04 am/pm  
(easting, northing, elevation in meters)

Start Temp: 90 °F End Temp: 96 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
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8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	<u>0648537</u>	<u>3740177</u>	<u>BURROW</u>	<u>CLASS 5, ~ 5" W X 2.5" T X ?</u> <u>"Dtbclass 5a (~ 2 pics - GPS top)</u>
2				
3				
4				
5				
6				
7				
8				

**USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET**

*Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion*

Date of survey: 27 MAY 11 Survey biologist(s): michael.wilcox@amec.com  
(day, month, year) (name, email, and phone number)

Site description: DESERT HARVEST, 257 ACRES, ~ 5 mi N DESERT CRT.  
(project name and size, general location)

County: RIVERSIDE Quad: VICTORY PASS Location: TAS RISE S 26 27  
(UTM coordinates, lat-long, and/or TRS, map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 257 AC. Transect #: 49 Transect length: .75 mi

GPS Start-point: 0647422, 3740174 Start time: 12:10 am/pm am  
(easting, northing, elevation in meters)

GPS End-point: 0648629, 3740196, 203m. End time: 12:38 am/pm pm  
(easting, northing, elevation in meters)

Start Temp: 96 °F End Temp: 100 °F

**Live Tortoises**

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
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7						
8						

**Tortoise Sign (burrows, scats, carcasses, etc)**

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
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## **Appendix C.3**

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Final Spring 2010 Focused Special-Status  
Plant Species Surveys



**FINAL  
SPRING 2010 FOCUSED SPECIAL-STATUS PLANT SPECIES SURVEYS  
DESERT HARVEST PROJECT  
RIVERSIDE COUNTY, CALIFORNIA**

**Submitted to:  
Aspen Environmental Group  
235 Montgomery Street, No.935  
San Francisco CA 94104**

**Submitted by:  
AMEC Earth & Environmental, Inc.  
3120 Chicago Avenue, Suite 110  
Riverside, California  
(951) 369-8060  
Contact: Shari Norton  
shari.norton@amec.com**

**15 April 2011**

**AMEC 1055400425**

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## EXECUTIVE SUMMARY

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AMEC Earth & Environmental, Inc. (AMEC) conducted surveys for special-status plant species between 12-17 April and 7 May 2010 for the proposed Desert Harvest Project, located in unincorporated eastern Riverside County, California. The 1,057-acre project site, which is located on lands administered by the Bureau of Land Management (BLM), is proposed to be the location of a 100-150 mega-watt photovoltaic panel solar power plant. This report, contracted to AMEC by Aspen Environmental Group (Aspen), presents the results of AMEC's field surveys for rare plants that have potential to occur within the area.

Based upon review of available literature and database, and local experts, 19 special-status plant species were identified to have the potential to occur within the vicinity of the proposed project (Appendix A). However, based on literature review and field survey results, these species are considered unlikely to occur primarily due to lack of suitable habitat, or if suitable habitat was present within the site, the species was unlikely to occur as it was not identified during the blooming period when it would be most identifiable.

One federally listed endangered plant, Coachella Valley milk vetch (*Astragalus lentiginosus* var. *cochellae*), has been reported from the project vicinity. No state or federally listed threatened or endangered species or BLM-designated sensitive species were located on the project site.

Two special-status plant species were observed during the focused survey: Emory's crucifixion thorn (*Castela emoryi*), and Utah vine milkweed (*Funastrum* [= *Cynanchum*] *utahense*). Emory's crucifixion is on CNPS List 2.3 (rare, threatened, or endangered in California, but more common elsewhere). Two individuals of this species were observed within the southwestern portion of the project area within Creosote Bush-White Burr Sage Scrub habitat. Utah vine milkweed is on CNPS List 4.2 (limited distribution; watch list). Three individuals of Utah vine milkweed were observed within the western portion of the project area within Creosote Bush-White Burr Sage Scrub habitat. Individuals of both species appeared healthy, with no evidence of drought stress, chlorosis, necrosis, or herbivory.

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APPENDIX C	REPRESENTATIVE SITE PHOTOGRAPHS

## ACRONYMS AND ABBREVIATIONS

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ACEC	Area of Critical Environmental Concern
amsl	above mean sea level
Aspen	Aspen Environmental Group
BLM	Bureau of Land Management
CDFG	California Department of Fish and Games
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
enXco	enXco Development Corporation
ESA	Federal Endangered Species Act
ft	feet
GIS	Geographical Information System
m	meters
NECO	Northern and Eastern Colorado Desert Coordinated Management Plan (BLM and CDFG, 2002)
GPS	Global Positioning System
MW	mega-watt
PV	photovoltaic

## 1.0 INTRODUCTION

---

AMEC Earth & Environmental, Inc. (AMEC) was contracted by Aspen Environmental Group (Aspen) to conduct focused surveys for special-status plant species in spring 2010 for the proposed Desert Harvest Project located in unincorporated Riverside County California. The proposed project consists of the development of a 150 mega-watt (MW) photovoltaic (PV) panel solar power plant.

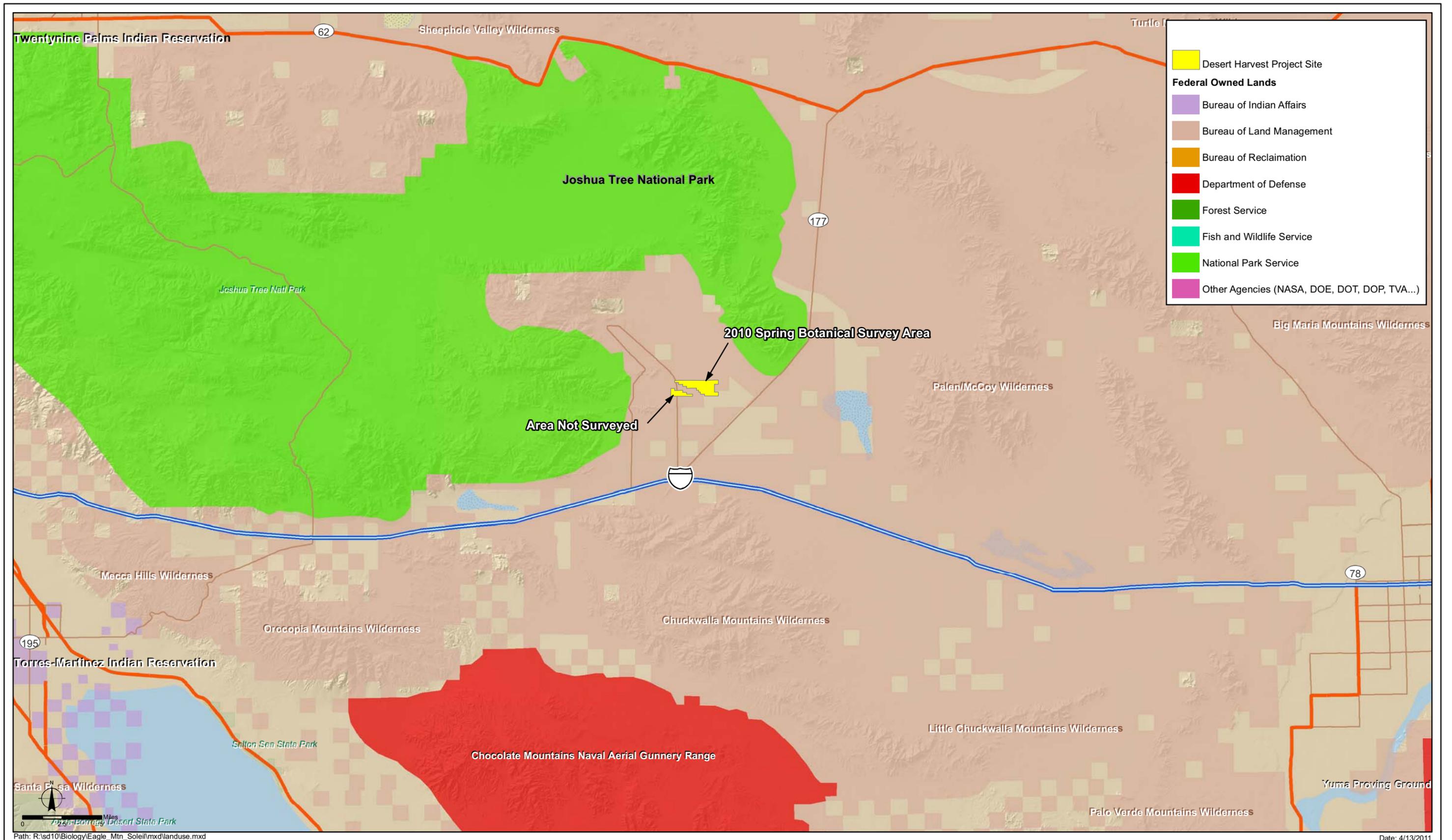
To comply with federal, state, and local laws, the proposed project's effects on biological resources must be evaluated. To achieve this objective, the presence and potential for presence of federally listed, state-listed, and other special-status plants, and natural communities must be identified and their distribution and approximate abundance determined. The objective of this study is to evaluate the likelihood of occurrence of special-status plants species and, if possible, determine their presence or absence within the project area.

### 1.1 Project Description and Location

The Desert Harvest Project site is located on lands administered by the Bureau of Land Management (BLM) (BLM Application Number 049491) in unincorporated Riverside County, approximately 6 miles north of Desert Center, California (Township 4 South, Range 15 East, Sections 25, 26, 27, USGS 7.5-minute *Victory Pass* and *East of Victory Pass* California quadrangles) (Figure 1). EnXco Development Corporation (enXco) proposes to build a 100-150 MW solar plant incorporating thin-film PV panels. PV technology utilizes solar cells in solar modules and arrays to convert the sun's energy into electricity.

The Right of Way Application consists of two non-contiguous parcels (Figure 2). The eastern parcel is 1,057 acres and the western parcel is 270 acres. This report addresses only the larger, eastern parcel, referred to as the "site" or "project site" throughout this report. The project site is currently vacant, undeveloped, natural open space. Surrounding land uses include undeveloped natural open space to the west, north and south (Figure 2). Some of the lands to the southeast of the site have been converted to agricultural uses (jojoba [*Simmondsia chinensis*] farming).





Project Location and Land Use  
Desert Harvest Project

FIGURE

## 2.0 SITE CHARACTERISTICS

---

The proposed project site is located in the Colorado subdivision of the Sonoran Desert. This region is sparsely vegetated and characterized by broad valleys interspersed with mountain ranges and dry lakes.

### 2.1 Climate

Summer temperatures within the Colorado Desert routinely reach above 100°F (June through September) and annual average precipitation recorded at the Eagle Mountain weather station is less than four inches. On average, August receives the most rainfall, although rainfall is also received in the winter months of December, January, and February (Western Regional Climate Center [WRCC] 2010).

The Eagle Mountain weather station, (Station No. 042598) is the closest weather station to the project area, and is located approximately 2.5 miles west of the project site. The total rainfall for the 2009/2010 rainfall year (1 July through 30 June) was 5.37 in (13.64 cm), which exceeds the yearly average (3.68 in [9.35 cm]) by approximately 1.69 in (4.29 cm) (WRCC 2010).

### 2.2 Topography and Soils

The site is on the southeast-sloping bajada below the Eagle and Coxcomb mountains. Site topography is mostly flat with elevations ranging from 583 to 675 feet (ft) above mean sea level (amsl). Ground surface visibility within the site is greater than 80 percent (enXco 2010). Soils vary from sandy alluvium to hard packed desert pavement. Onsite ephemeral drainages flow southeasterly towards Desert Center at a slope of less than 1 percent (enXco 2010).

### 2.3 Vegetation Communities

Dominant vegetation communities within the project site include Creosote Bush-White Burr Sage Scrub and Smoke Tree Woodland (Sawyer et al. 2009). The Creosote Bush-White Burr Sage Scrub vegetation community is the equivalent to the "Sonoran Creosote Bush Scrub" and the Smoke Tree Woodland is the equivalent to the "Desert Dry Wash Woodland" described by Holland (1986).

#### 2.3.1 Creosote Bush-White Burr Sage Scrub

The Creosote Bush-White Burr Sage Scrub vegetation community is the most characteristic vegetation of California desert communities. This vegetation community is characterized by low shrub species diversity and the wide spacing of the shrubs, usually with bare ground between, and is comprised of the co-dominant species creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Associated species include cheesebush (*Hymenoclea* [= *Ambrosia*] *salsola*), brittlebush (*Encelia farinosa*), pencil cholla (*Cylindropuntia ramosissima*), beavertail cactus (*Opuntia basilaris*), California fagonia (*Fagonia laevis*), and sticky fagonia (*Fagonia pachyacantha*). Many species of seasonal annuals, including desert sunflower (*Geraea canescens*), desert dandelion (*Malacothrix glabrata*), and desert four-spot (*Eremalche rotundifolia*), were observed onsite. The mapped Creosote Bush-White Burr Sage Scrub community also includes small patches of desert pavement with very sparse vegetation cover composed primarily of devil's spineflower (*Chorizanthe rigida*), kidneyleaf buckwheat

(*Eriogonum reniforme*), and Emory's rock daisy (*Perityle emoryi*), with relatively sparse cover of low-statured creosote bush. Creosote Bush-White Burr Sage Scrub is not designated as a high priority natural vegetation community by the California Department of Fish and Game (CDFG 2010c).

Creosote Bush-White Burr Sage Scrub on the site matches the Desert Scrub wildlife habitat described by Laudenslayer and Boggs (1988). It provides habitat for a variety of special-status and common wildlife species including burrowing species such as kangaroo rats (*Dipodomys* spp.), pocket mice (*Perognathus* spp.), and desert cottontail (*Sylvilagus auduboni*); and mesopredators such as desert kit fox (*Vulpes macrotis arsipus*) and coyote (*Canis latrans*). This scrub community also serves as habitat for several species of reptiles including desert iguana (*Dipsosaurus dorsalis*), sidewinder (*Crotalus cerastes*), desert horned lizard (*Phrynosoma platyrhinos*), Great Basin whiptail (*Aspidocelis tigris tigris*), long-nosed leopard lizard (*Gambelia wislizenii*) and zebra-tailed lizard (*Callisaurus draconoides*). Common birds observed within this vegetation community included black-throated sparrow (*Amphispiza bilineata*), verdin (*Auriparus flaviceps*), Gambel's quail (*Callipepla gambelii*), common raven (*Corvus corax*), red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), and cactus wren (*Campylorhynchus brunneicapillus*).

### **2.3.2 Smoke Tree Woodland**

Smoke Tree Woodland occurs throughout the dry washes within the project area and is dominated by ironwood (*Olneya tesota*) and smoketree (*Psoralea spinosa*), with blue palo verde (*Parkinsonia florida*), and cat claw acacia (*Acacia greggii*) occurring in lesser numbers. Smoke Tree Woodlands are characterized by the presence of arborescent, often spiny, shrubs generally associated with washes or alluvial deposits adjacent to washes. Plant species in desert wash habitats are generally taller, up to approximately 9m (30 ft) in height, and denser than those of surrounding desert habitats, such as the Creosote Bush-White Burr Sage Scrub, with the height of the wash vegetation proportional to the size of the arroyo (Laudenslayer 1988). The Smoke Tree Woodland on the project site fits this description, with the ironwood, smoketree, and blue palo verde exceeding both the height and density of the surrounding Creosote Bush-White Burr Sage Scrub vegetation community, with many of the individual shrubs of the Smoke Tree Woodland located along the low, vertically-incised banks. This habitat supports a variety of wildlife species, essentially the same species as those occupying the Creosote Bush-White Burr Sage Scrub. This community is ranked by CDFG (2003; 20010c) as a special-status vegetation type, with state rarity ranking of S3. It is one of several communities included within broader vegetation types called desert wash woodland or microphyll woodland (Holland 1986; Schoenherr and Burk 2007).

### 3.0 SURVEY METHODOLOGY

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This section provides an overview of methods used to evaluate special-status botanical resources associated with the project site (Figure 2).

#### 3.1 Pre-Field Survey Methods

##### 3.1.1 Literature and Database Review

Prior to field surveys, a literature review was conducted to identify special-status biological resources known from the vicinity of the project site. For the purpose of this review, “vicinity” includes all areas of the USGS 7.5-minute quadrangle wherein the project occurs and all surrounding quadrangles: *Victory Pass, East of Victory Pass, Desert Center, Corn Spring, Coxcomb Mountains, Pinto Wells, Placer Canyon, Buzzard Spring, Hayfield Spring, West of Palen Pass, Palen Lake, and Sidewinder Well*. The following literature and databases were reviewed:

- CDFG California Natural Diversity Database (CNDDDB) version 3.1.1 RareFind3 (CDFG 2010a);
- California Native Plant Society Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2010);
- Eastern Colorado Desert Coordinated Management (NECO) Plan (Bureau of Land Management [BLM] and CDFG 2002);
- List of California BLM Sensitive Plants (BLM 2009).

Based upon review of the literature and database above, and consulting with local experts (Andrew C. Sanders from the UC Riverside Herbarium), nineteen special-status plant species were identified to have the potential to occur within the vicinity of the proposed project (Appendix A). Plant taxa were considered to be special-status species if they were classified as one or more of the following:

- Listed or proposed for listing as threatened or endangered under Endangered Species Act (ESA) or candidates for possible future listing as threatened or endangered under the ESA (50 CFR §17.12);
- Listed or candidates for listing by the State of California as threatened or endangered under CESA (Fish and Game Code §2050 et seq.);
- Listed as BLM Sensitive (“all plant species that are currently on List 1B of the CNPS Inventory of Rare and Endangered Plants of California, are BLM sensitive species, along with others that have been designated by the California State Director,” BLM 2009);
- Listed as rare under the California Native Plant Protection Act (Fish and Game Code §1900 et seq.);
- Meet the definition of rare or endangered under CEQA §15380(b) and (d). Species that may meet the definition of rare or endangered include the following:

- Species considered by the California Native Plant Society (CNPS) to be “rare, threatened or endangered in California” (Lists 1A, 1B and 2);
- Species that may warrant consideration on the basis of local significance or recent biological information;
- Some species included on the California Natural Diversity Database’s (CNDDB) Special Plants, Bryophytes, and Lichens List (CDFG).
- Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.

In addition to specific plant taxa, special-status botanical resources include natural vegetation communities that are either unique, of relatively limited distribution in the region, or of particularly high wildlife value. As such, the CDFG maintains a list of natural communities recognized to be of high priority for inventory in CNDDB. Lead agencies may request that impacts to these communities be addressed in environmental documents. Local agencies may also have policies requiring avoidance of rare community types (CDFG 2010c).

Appendix A presents the list of 19 special-status species considered, based on the literature review, to have potential to occur within the project area, as well as their habitat requirements, distribution, blooming period, listing status and occurrence probability. Figure 3 illustrates documented occurrences of special-status plant species that are known from the vicinity.

### **3.2 Reference Site Visits**

Where available, reference populations located within the general vicinity of the project area were visited for observation prior to field surveys. Two reference populations of special-status species that have potential to occur within the project area were identified and visited by AMEC biologist Nathan Moorhatch and AMEC botanist Shari Norton: Coachella Valley milk-vetch and Harwood’s milk-vetch (*Astragalus insularis* var. *harwoodii*).

A reference population of Coachella Valley milk-vetch located at the southeast corner of the intersection of 18<sup>th</sup> Avenue and Palm Drive in the City of Desert Hot Springs was visited on 12 April 2010. Coachella Valley milk-vetch was observed in fruit at the time of the visit. A reference population of Harwood’s milk-vetch located north of Interstate 10 and west of Mesa Road in the City of Blythe was also visited on 12 April 2010. Harwood’s milk-vetch was observed blooming and in fruit at the time of this visit.

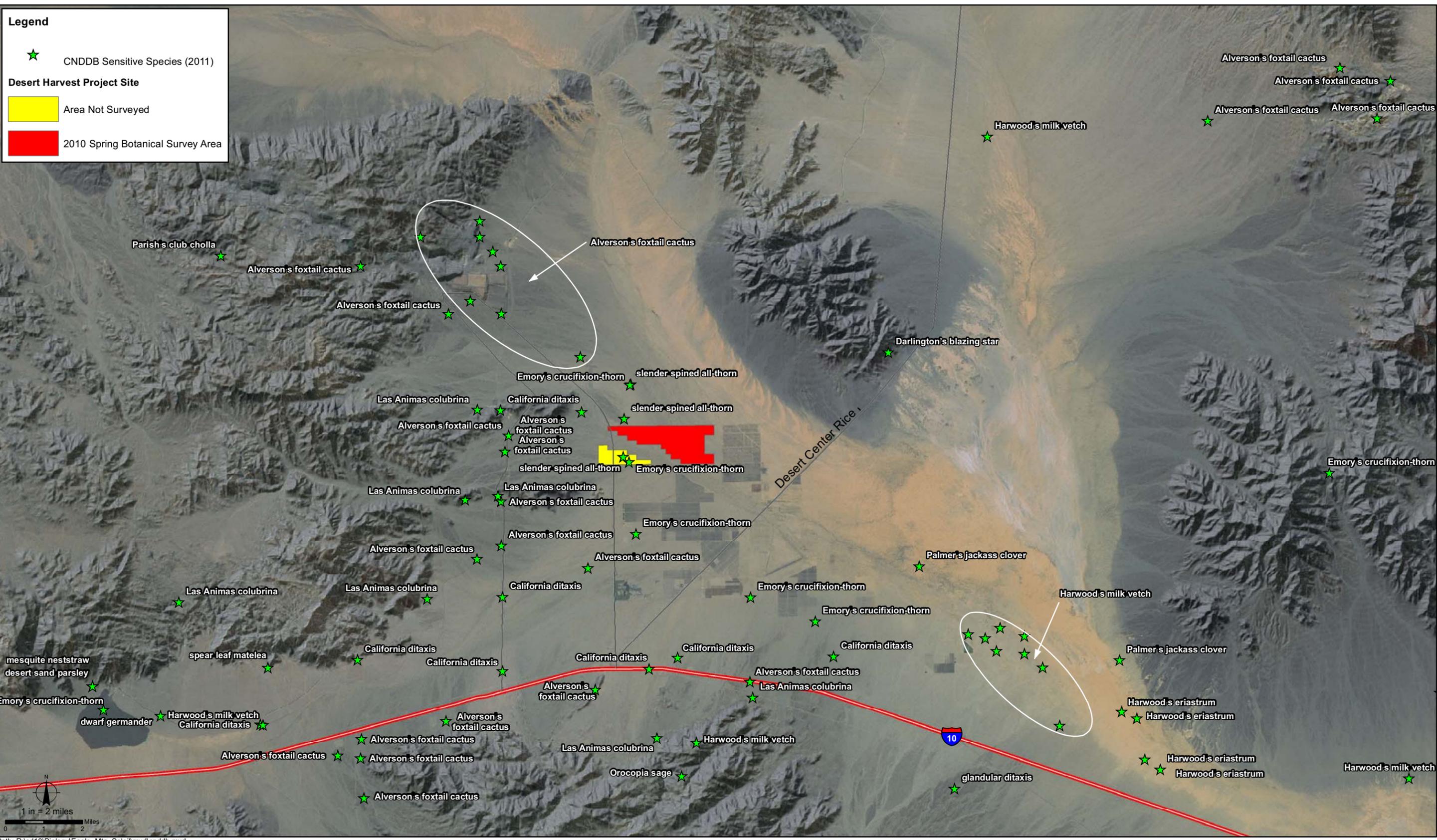
Coachella Valley milk-vetch is the only listed threatened or endangered plant reported from the vicinity and Harwood’s milk-vetch is a relatively widespread CNPS List 2.2 species with potential to occur in the project area. No BLM Sensitive Species or CNPS List 1B species are known from the project vicinity. Reference populations for other special-status plants known from the vicinity were not visited.

**Legend**

- ★ CNDDDB Sensitive Species (2011)

**Desert Harvest Project Site**

- Area Not Surveyed
- 2010 Spring Botanical Survey Area



Special-Status Plant Species Known to Occur within the Project Vicinity  
Desert Harvest Project

FIGURE  
3



### 3.3 Field Survey Methods

Focused surveys for special-status plants were conducted in accordance with the Bureau of Land Management (BLM) *Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species* (BLM 2009), as well as the CDFG *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009). Per these protocols, field surveys are to be conducted in a manner which maximizes the likelihood of locating special-status plant species or special-status natural communities that may be present. Surveys are to be floristic in nature (every plant taxon that is observed on site is identified to the taxonomic level necessary to determine rarity and listing status), conducted at the time of year when species are both evident and identifiable, and conducted using systematic field techniques in all habitats of the site to ensure thorough coverage of potential impact areas. Furthermore, when special-status plants are known to occur in the type(s) of habitat present in the project area, reference sites are to be visited to determine whether those species are identifiable at the time of the survey and to obtain a visual image of the target species, associated habitat, and associated natural community.

Focused surveys for special-status plants were conducted concurrently with desert tortoise (*Gopherus agassizii*) surveys (which included foot surveys of 100 percent of the project site). The desert tortoise surveys were conducted using belt transects spaced 10 meters (m) apart which were systematically walked over the entire 1,057-acre project site. The field crew conducting the desert tortoise survey was given a field guide prepared for this project that illustrated special-status plant species that were identified during the literature and database review (Appendix A). AMEC botanist Shari Norton accompanied all crews performing the desert tortoise surveys and documented all species within the project area.

Tortoise/special-status plant surveys were conducted between 12-17 April by biologists Jim Boone, PhD., Stephen Ferrand, William Ferrand, Alex Heindl, Nathan Moorhatch, Shari Norton, Michael Omana, Dennis Strong, and Michael Wilcox. These surveys were followed by a second survey that was conducted on 7 May 2010 by Nathan Moorhatch and Shari Norton to cover small portion of the project site for which the botanist was unavailable during the initial survey on April 17. During this May 7 survey, the AMEC biologists and botanist walked 10-meter wide belt transects and covered the entirety of the area previously not covered by the botanist. These surveys collectively provided thorough coverage throughout the site, using systematic field techniques in all habitats types present.

Special-status species data were collected using a global positioning system (GPS) device and added to the project's geographic information system (GIS) database. All GIS data were collected as polygon, line, or point data containing a list of attributes for each dedicated occurrence. All plant species encountered during the field surveys were identified and recorded (Appendix B). Species that could not be identified immediately were photographed or collected for further investigation using *The Jepson Manual* (Hickman 1993). Scientific and common names of plants follow Hickman (1993) or more recent published taxonomical revisions of genera.

Surveys included describing vegetation communities within the project area. Vegetation communities were described based on field biologists' qualitative judgements of biotic and abiotic features, including but not limited to species composition, species dominance, soils, substrates, hydrology, and topography. Vegetation communities were classified based on A Manual of California Vegetation (Sawyer et. al. 2009). Vegetation descriptions are provided in Section 2.3 of this report.

## 4.0 SURVEY RESULTS

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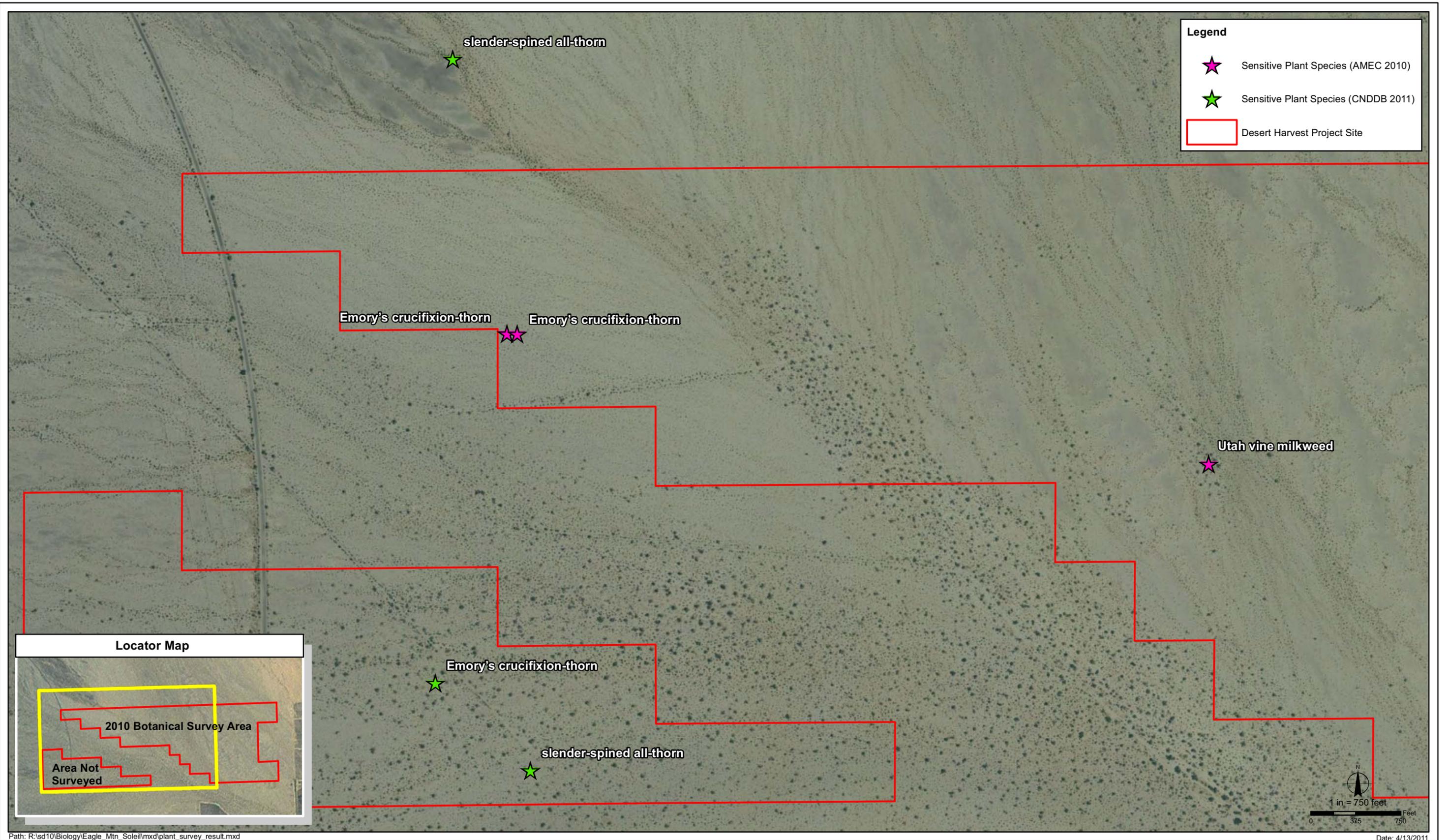
Two special-status plant species were observed during the focused survey: Emory's crucifixion thorn (*Castela emoryi*), and Utah vine milkweed (*Funastrum [=Cynanchum] utahense*) (Figure 4). While it is likely that the majority of individuals of these two special-status plant species were observed during the survey, it is possible that some individual plants were not observed due to growth under a scrub canopy, or other factors.

Emory's crucifixion is a CNPS List 2.3 species (rare, threatened, or endangered in California, but more common elsewhere) that is in the quassia family (Simaroubaceae). It is known to occur within Mojavean desert scrub, playas, and Sonoran desert scrub habitats within gravelly substrates at elevations ranging from 90-670 meters (m). Emory's crucifixion thorn is a deciduous shrub that blooms from June through July (CNPS 2010). Three individuals of this species were observed within the western portion of the project area (Figure 4) within the Bush-White Burr Sage Scrub vegetation community. Onsite photographs of this species are presented in Appendix C).

Utah vine milkweed is a CNPS List 4.2 species (limited distribution; watch list) that is in the milkweed family (Asclepiadaceae). It is known to occur within sandy or gravelly substrates of Mojavean desert scrub and Sonoran desert scrub habitats at elevations ranging from 150-1435m. Utah vine milkweed is a perennial herb and blooms from April through June (CNPS 2010). Two individuals of this species were observed within the southwestern portion of the project area (Figure 4) within the Bush-White Burr Sage Scrub vegetation community. Onsite photographs of this species are presented in Appendix C).

For each special-status plant species that may have the potential to occur within the project, the probability of occurrence was derived from field experience, expert consultation, reference populations, and/or from literature as compared to the habitat conditions encountered within the project area (Appendix A). Each species was assessed for its potential to occur within the project area based on the following criteria:

- **Observed:** Species observed on the site during surveys described here, or recorded onsite by other qualified biologists.
- **High:** Observed in similar habitat in region by qualified biologists, or habitat on the site is a type often utilized by the species and the site is within the known range of the species.
- **Moderate:** Reported sightings in surrounding region, or site is within the known range of the species and habitat on the site is a type occasionally used by the species.
- **Low:** Site is within the known range of the species but habitat on the site is rarely used by the species.
- **Unlikely to occur:** A focused study failed to detect the species, or, no suitable habitat is present.
- **Unknown:** No focused surveys have been performed in the region, and the species' distribution and habitat are poorly known.



Spring 2010 Focused Special-Status Plant Species Survey Results  
Desert Harvest Project

FIGURE

## 5.0 CONCLUSION AND RECOMMENDATIONS

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No state or federally listed threatened or endangered species or BLM-designated sensitive species were located on the project site. Two special status species, Emory's crucifixion thorn (CNPS List 2.3) and Utah vine milkweed (CNPS List 4.2) were found on the site (Figure 4). One federally listed endangered plant, Coachella Valley milk vetch, has been reported from the project vicinity; however, it is now thought that plants are not the listed variety and are instead the more common freckled milk vetch (*Astragalus insularis* var. *variabilis*). Regardless, if the occurrences of Coachella Valley milk vetch are accurate or not, the special-status surveys conducted for the project were conducted during the appropriate blooming period for this species, thus, it would have likely been observed during the field surveys. No BLM-designated sensitive species have been reported from the vicinity.

Given the above-average rainfall during the winter of 2009-2010, it is likely that the majority of spring-flowering species would have been observable during the surveys. Individuals of Emory's crucifixion thorn and Utah vine milkweed appeared healthy, with no evidence of drought stress, chlorosis, necrosis, or herbivory. It is important to note that one special-status plant species, glandular ditaxis (*Ditaxis claryana*), may have been undetectable due to their growing and/or blooming season occurring at a time other than the survey period. It is recommend that late-season surveys be done in late summer to early fall 2010 in the washes following summer, monsoonal rains, to ensure that all special-status plant species that are likely to occur onsite (Appendix A) are assessed.

## 6.0 REFERENCES

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Desert Harvest Project  
Spring 2010 Special-status Plant Species Surveys  
Riverside County, California  
AMEC Project No. 1055400425  
15 April 2011



## **APPENDIX A**

### **SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR WITHIN THE DESERT HARVEST PROJECT**

Sensitive species	Habitat and Distribution	Blooming Period	Status	Occurrence Probability
<i>Abronia villosa</i> var. <i>aurita</i> <b>chaparral sand-verbena</b>	Annual herb. Occurs in desert scrub in sandy soils east of the Little San Bernardino Mountains.	January – August	Federal: ND BLM:ND State: ND CNDDDB: S2.1 CNPS: List 1B.1	Moderate potential to occur. The plants in western Riverside County appear to be a distinct taxon from those found east of the mountains, and it is this taxon in western Riverside County which is of conservation concern not the desert taxon.
<i>Ammoselinum giganteum</i> <b>desert sand-parsley</b>	Occurs in Sonoran desert scrub in heavy soils under shrubs within the Coachella Valley.	March - April	Federal: ND BLM:ND State: ND CNDDDB: SH CNPS: List 2.3	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during blooming period focused surveys.
<i>Astragalus insularis</i> var. <i>harwoodii</i> <b>Harwood's milk-vetch</b>	Annual herb. Occurs in desert dunes and Mojavean desert scrub, on sandy or gravelly soils.	January – May	Federal: ND BLM:ND State: ND CNDDDB:S2.2 CNPS: List 2.2	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during blooming period focused surveys
<i>Astragalus lentiginosus</i> var. <i>coachellae</i> <b>Coachella Valley milk-vetch</b>	Annual/perennial herb. Occurs in Sonoran desert scrub in sandy flats, washes, outwash fans, sometimes on dunes.	February - May	Federal: END CA: ND CNDDDB:S2.1 CNPS: List 1B.2	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during blooming period focused surveys.
<i>Ayenia compacta</i> <b>ayenia</b>	Perennial herb. Occurs in Sonoran desert scrub on rocky soils.	March – April	Federal: ND BLM:ND State: ND CNDDDB:S3.3 CNPS: List 2.3	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during blooming period focused surveys.
<i>Castela emoryi</i> <b>crucifixion thorn</b>	Perennial deciduous shrub. Occurs in Mojavean desert scrub and Sonoran desert scrub, in playas, in gravelly soils, and sometimes in alkali playas or washes.	April - July	Federal: ND BLM:ND State: ND CNDDDB:S2.2 CNPS: List 2.3	<b>Present.</b> Species observed during focused surveys. See text and Figure 4.
<i>Colubrina californica</i> <b>Las Animas colubrina</b>	Perennial deciduous shrub. Occurs in Mojave desert scrub and Sonoran desert scrub in rocky canyon areas.	April – June	Federal: ND BLM:ND State: ND CNDDDB: S2S3.3 CNPS: List 2.3	Unlikely to occur. No suitable rocky canyon micro-habitat onsite; this species was not observed during blooming period focused surveys.
<i>Coryphantha alversonii</i> <b>Alverson's foxtail cactus</b>	Perennial stem succulent. Occurs in Mojavean desert scrub and Sonoran desert scrub in granitic sandy or rocky soils.	April – June	Federal: ND BLM:ND State: ND CNDDDB:S3.2 CNPS: List 4.3	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during blooming period focused surveys.
<i>Funastrum</i> (= <i>Cynanchum</i> ) <i>utahense</i> <b>Utah vine milkweed</b>	Perennial herb. Occurs in Mojavean desert scrub and Sonoran desert scrub in sandy or gravelly soils	April - June	Federal: ND BLM:ND State: ND CNDDDB:S3.2 CNPS: List 4.2	<b>Present.</b> Species observed during focused surveys. See text and Map 4.

Sensitive species	Habitat and Distribution	Blooming Period	Status	Occurrence Probability
<i>Ditaxis claryana</i> <b>glandular ditaxis</b>	Perennial herb. Occurs in Mojavean desert scrub and Sonoran desert scrub, in dry washes and on rocky hillsides, in sandy soils.	October – March	Federal: ND BLM:ND State: ND CNDDDB:S1 CNPS: List 2.2	Unlikely to occur. Suitable habitat onsite; however, this perennial species was not observed during focused surveys. Follow-up surveys recommended due to extended blooming season.
<i>Ditaxis serrata var. californica</i> <b>California ditaxis</b>	Perennial herb. Occurs in Sonoran desert scrub, on sandy washes and alluvial fans of the foothill and lower desert slopes.	March – December	Federal: ND BLM:ND State: ND CNDDDB:S2 CNPS: List 3.2	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during blooming period focused surveys. Follow-up surveys recommended due to extended blooming season.
<i>Grusonia parishii</i> <b>Parish's club-cholla</b>	Perennial stem succulent. Occurs in Joshua tree woodland, Mojavean desert scrub, and Sonoran desert scrub on sandy and rocky soils.	May - June	Federal: ND BLM:ND State: ND CNDDDB:S2 CNPS: List 3.2	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during blooming period focused surveys.
<i>Matelea parvifolia</i> <b>spearleaf</b>	Perennial herb. Occurs in Mojavean desert scrub and Sonoran desert scrub on rocky soils.	March – May	Federal: ND BLM:ND State: ND CNDDDB:S2.2 CNPS: List 2.3	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during blooming period focused surveys.
<i>Salvia greatae</i> <b>Orocopia sage</b>	Perennial evergreen shrub. Occurs in Mojavean desert scrub and Sonoran desert scrub, in broad alluvial bajadas and fans adjacent to desert washes in gravelly or rocky soils, and slopes of canyons.	March - April	Federal: ND BLM:ND State: ND CNDDDB:S2 CNPS: List 1B.3	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during blooming period focused surveys. Project site outside known range for species, which is on the south side of the Orocopia Mountains (pers. comm. Andy Sanders).
<i>Selaginella eremophila</i> <b>desert spike-moss</b>	Rhizomatous perennial herb. Occurs in Sonoran desert scrub, in shaded areas on gravelly soils, in crevices, or among rocks	(May) June (July) Months in parentheses are uncommon	Federal: ND BLM:ND State: ND CNDDDB:S2.2 CNPS: List 2.2	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during focused surveys.
<i>Senna covesii</i> <b>Coves's cassia</b>	Perennial herb. Occurs in Sonoran desert scrub on sandy soils.	March – June	Federal: ND State: ND CNDDDB:S2.2 CNPS: List 2.2	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during blooming period focused surveys.
<i>Stylocline sonorensis</i> <b>mesquite neststraw</b>	Annual herb. Occurs in Sonoran desert scrub on sandy soils.	April	Federal: ND BLM:ND State: ND CNDDDB: SX CNPS: List 1A	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during blooming period focused surveys.

Sensitive species	Habitat and Distribution	Blooming Period	Status	Occurrence Probability
<i>Teucrium cubense</i> ssp. <i>depressum</i> <b>dwarf germander</b>	Annual herb. Occurs in desert dunes, Sonoran desert scrub, and playa margins, in areas where water accumulates following heavy rains.	March – May (uncommonly from September – November)	Federal: ND BLM:ND State: ND CNDDDB:S2 CNPS: List 2.2	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during blooming period focused surveys.
<i>Wislizenia refracta</i> ssp. <i>refracta</i> <b>jackass clover</b>	Annual herb. Occurs in desert dunes within Mojavean desert scrub, Sonoran desert scrub, and playas.	April - November	Federal: ND BLM:ND State: ND CNDDDB:S1.2 CNPS: List 2.2	Unlikely to occur. Suitable habitat onsite; however, this species was not observed during blooming period focused surveys.

Definitions of Status Designations and Occurrence Probabilities for Tables 1, 2, and 3.

**Federal designations**

END: Endangered  
 ND: Not designated

**State designations :**

ND: Not designated

**CNDDB Rank:**

- S1 = Critically Imperiled—Critically imperiled in the state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
- S2 = Imperiled—Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
- S3 = Vulnerable—Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
- SH = All sites are historical
- SX = All California sites are extirpated.

**California Native Plant Society (CNPS) designations:** (Note: According to CNPS [Tibor 2001], plants on Lists 1B and 2 meet definitions for listing as threatened or endangered under Section 1901, Chapter 10 of the California Fish and Game Code.)

- List 1B: Plants rare and endangered in California and throughout their range.
- List 2: Plants rare, threatened or endangered in California but more common elsewhere.
- List 3: Plants for which more information is needed.
- List 4: Plants of limited distribution; a "watch list."

**CNPS List Extension**

- 0.1: Seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)
- 0.2: Fairly endangered in California (20-80% of occurrences threatened)
- 0.3: Not very threatened in California (<20% of occurrences threatened)

**Definitions of occurrence probability:**

- Present:** Observed on the site by AMEC personnel, or recorded on-site by other qualified biologists.
- High:** Observed in similar habitat in region by qualified biologists, or habitat on the site is a type often utilized by the species and the site is within the known range of the species.
- Moderate:** Reported sightings in surrounding region, or site is within the known range of the species and habitat on the site is a type occasionally used by the species.
- Low:** Site is within the known range of the species but habitat on the site is rarely used by the species.
- Unlikely to occur:** A focused study failed to detect the species, or, no suitable habitat is present.
- Unknown:** No focused surveys have been performed in the region, and the species' distribution and habitat are poorly known.

Desert Harvest Project  
Spring 2010 Special-status Plant Species Surveys  
Riverside County, California  
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**APPENDIX B**  
**OBSERVED VASCULAR PLANT SPECIES**

Scientific Name	Common Name
<b>ANGIOSPERMS (DICOTYLEDONS)</b>	
<b><u>AMARANTHACEAE(CHENOPODIACEAE)</u></b>	<b><u>AMARANTH FAMILY</u></b>
<i>Chenopodium</i> sp.	goosefoot
<i>Tidestromia oblongifolia</i>	Arizona honeysweet
<b><u>APOCYNACEAE (ASCLEPIADACEAE)</u></b>	<b><u>DOGBANE FAMILY</u></b>
<i>Asclepias erosa</i>	desert milkweed
<i>Asclepias subulata</i>	rush milkweed
<i>Funastrum (= Cynanchum) utahense</i>	Utah vine milkweed
<b><u>ASTERACEAE</u></b>	<b><u>SUNFLOWER FAMILY</u></b>
<i>Ambrosia dumosa</i>	burro bush
<i>Ambrosia salsola</i>	cheesebush
<i>Bebbia juncea</i>	sweetbush
<i>Chaenactis carphoclinia</i>	pebble pincushion
<i>Chaenactis fremontii</i>	pincushion flower
<i>Chaenactis stevioides</i>	desert pincushion
<i>Encelia farinosa</i>	brittlebush
<i>Encelia frutescens</i>	button brittlebush
<i>Geraea canescens</i>	desert sunflower
<i>Malacothrix glabrata</i>	desert dandelion
<i>Monoptilon bellioides</i>	Mojave desert star
<i>Perityle emoryi</i>	Emory's rock daisy
<i>Psathyrotes ramosissima</i>	turtleback
<i>Rafinesquia neomexicana</i>	desert chicory
<b><u>BORAGINACEAE</u></b>	<b><u>BORAGE FAMILY</u></b>
<i>Cryptantha barbiger</i>	bearded cryptantha
<i>Cryptantha dumetorum</i>	twining cryptantha
<i>Cryptantha pterocarya</i>	winged-nut forget-me-not
<i>Pectocarya platycarpa</i>	broadfruit combseed
<i>Pectocarya recurvata</i>	curvenut combseed
<b><u>BRASSICACEAE</u></b>	<b><u>MUSTARD FAMILY</u></b>
* <i>Brassica tournefortii</i>	wild turnip
<i>Lepidium lasiocarpum</i>	shaggyfruit pepperweed
<b><u>CACTACEAE</u></b>	<b><u>CACTUS FAMILY</u></b>
<i>Cylindropuntia echinocarpa</i>	golden cholla
<i>Cylindropuntia ramosissima</i>	pencil cholla
<i>Ferocactus cylindraceus</i>	barrel cactus
<i>Opuntia basilaris</i>	beavertail cactus
<b><u>CARYOPHYLLACEAE</u></b>	<b><u>PINK FAMILY</u></b>
<i>Achyronychia cooperi</i>	frost mat
<b><u>CUCURBITACEAE</u></b>	<b><u>GOURD FAMILY</u></b>
<i>Brandegea bigelovii</i>	desert starvine
<b><u>EHRETIACEAE (BORAGINACEAE)</u></b>	<b><u>EHRETIA FAMILY</u></b>
<i>Tiquilia plicata</i>	plicate tiquilia
<b><u>EUPHORBIACEAE</u></b>	<b><u>SPURGE FAMILY</u></b>
<i>Chamaesyce albomarginata</i>	rattlesnake weed
<i>Chamaesyce polycarpa</i>	golondrina
<i>Croton californicus</i>	California croton

Scientific Name	Common Name
<i>Ditaxis lanceolata</i>	lanceleaf ditaxis
<i>Ditaxis neomexicana</i>	common ditaxis
<i>Stillingia linearifolia</i>	linear-leaved stillingia
<b><u>FABACEAE</u></b>	<b><u>LEGUME FAMILY</u></b>
<i>Acacia greggii</i>	cat claw acacia
<i>Dalea mollissima</i>	hairy dalea
<i>Lupinus arizonicus</i>	Arizona lupine
<i>Lupinus</i> sp.	lupine
<i>Marina parryi</i>	Parry dalea
<i>Olneya tesota</i>	ironwood
<i>Parkinsonia florida</i>	blue palo verde
<i>Psoralethamnus emoryi</i>	dye plant
<i>Psoralethamnus schottii</i>	indigobush
<i>Psoralethamnus spinosus</i>	smoke tree
<b><u>FOUQUIERIACEAE</u></b>	<b><u>OCOTILLO FAMILY</u></b>
<i>Fouquieria splendens</i>	ocotillo
<b><u>HYDROPHYLLACEAE</u></b>	<b><u>WATERLEAF FAMILY</u></b>
<i>Phacelia crenulata</i> var. <i>ambigua</i>	purple-stem phacelia
<b><u>MALVACEAE</u></b>	<b><u>MALLOW FAMILY</u></b>
<i>Eremalche rotundifolia</i>	desert four-spot
<b><u>NYCTAGINACEAE</u></b>	<b><u>FOUR O'CLOCK FAMILY</u></b>
<i>Abronia villosa</i> var. <i>villosa</i>	sand verbena
<b><u>ONAGRACEAE</u></b>	<b><u>EVENING PRIMROSE FAMILY</u></b>
<i>Camissonia boothii</i>	Booth's evening-primrose
<i>Camissonia claviformis</i>	brown-eyed evening primrose
<i>Camissonia</i> sp.	evening primrose
<b><u>PAPAVERACEAE</u></b>	<b><u>POPPY FAMILY</u></b>
<i>Eschscholzia minutiflora</i>	pygmy goldenpoppy
<b><u>PLANTAGINACEAE</u></b>	<b><u>PLANTAIN FAMILY</u></b>
<i>Plantago ovata</i>	woolly plantain
<b><u>POLEMONIACEAE</u></b>	<b><u>PHLOX FAMILY</u></b>
<i>Gilia latifolia</i>	broadleaf gilia
<i>Loeseliastrum schottii</i>	Schott's calico
<b><u>POLYGONACEAE</u></b>	<b><u>BUCKWHEAT FAMILY</u></b>
<i>Chorizanthe brevicornu</i>	brittle spineflower
<i>Chorizanthe corrugata</i>	wrinkled spineflower
<i>Chorizanthe rigida</i>	devil's spiny herb
<i>Eriogonum reniforme</i>	kidneyleaf buckwheat
<b><u>RESEDACEAE</u></b>	<b><u>MIGNONETTE FAMILY</u></b>
<i>Oligomeris linifolia</i>	narrow-leaved oligomeris
<b><u>SIMAROUBACEAE</u></b>	<b><u>QUASSIA FAMILY</u></b>
<i>Castela emoryi</i>	crucifixion thorn
<b><u>ZYGOPHYLLACEAE</u></b>	<b><u>CALTROP FAMILY</u></b>
<i>Fagonia laevis</i>	California fagonia
<i>Fagonia pachyacantha</i>	sticky fagonia
<i>Larrea tridentata</i>	creosote bush
<i>Tribulus terrestris</i> *	puncture vine

Scientific Name	Common Name
<b>ANGIOSPERMS (MONOCOTYLEDONS)</b>	
<b><u>ARECACEAE</u></b>	<b><u>PALM FAMILY</u></b>
* <i>Phoenix dactylifera</i>	date palm
<b><u>LILIACEAE</u></b>	<b><u>LILY FAMILY</u></b>
<i>Calochortus</i> sp.	mariposa lily
<i>Hespercallis undulata</i>	desert lily
<b><u>POACEAE</u></b>	<b><u>GRASS FAMILY</u></b>
<i>Pleuraphis (=Hilaria) rigida</i>	big galleta
<i>Schismus barbatus</i> *	Mediterranean schismus

Notes:

This list reports plants observed during site surveys. Other species may have been undetectable due to their growing season. Plants were identified from keys, descriptions and drawings in Hickman (ed.) 1993 and Munz 1974. Some specimens were identified or confirmed by Andrew Sanders (U.C. Riverside Herbarium). Unless noted otherwise, nomenclature and systematics follows Hickman (ed.) 1993. Where other names are also in use, they are noted in parentheses.

**Symbols and Abbreviations:**

- \* = Non-native species
- Sp = Plant identified only to genus
- ssp. = Subspecies

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**APPENDIX C**

**REPRESENTATIVE SITE PHOTOGRAPHS**

**DESERT HARVEST PROJECT  
FOCUSED SPECIAL-STATUS PLANT SPECIES SURVEYS  
PHOTOGRAPHIC LOG**



**Photograph No. 1**

Representative photo of Creosote Bush-White Burr Sage Scrub vegetation community.



**Photograph No. 2**

Representative photo of Smoke Tree Woodland vegetation community.

**AMEC Job No.  
1055400425**

**APPENDIX C**



**DESERT HARVEST PROJECT  
FOCUSED SPECIAL-STATUS PLANT SPECIES SURVEYS  
PHOTOGRAPHIC LOG**



**Photograph No. 3**

Representative photo of desert pavement area within the Creosote Bush-White Burr Sage Scrub vegetation community.



**Photograph No. 4**

Surveyors walking belt transect Creosote Bush-White Burr Sage Scrub vegetation community.

DESERT HARVEST PROJECT  
FOCUSED SPECIAL-STATUS PLANT SPECIES SURVEYS  
PHOTOGRAPHIC LOG



**Photograph No. 5**

Photo of crucifixion thorn (*Castela emoryi*).



**Photograph No. 6**

Photo of Utah cynanchum (*Funastrum [=Cynanchum] utahense*).

# **Appendix C.4**

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Avian Point Counts in 2011

**Desert Harvest Solar Project**

**Avian Point Counts in 2011**

**Riverside County, California**

**Township 4 South, Range 15 East, Sections 25, 26 & 27  
USGS 7.5' Victory Pass & East of Victory Pass Quadrangles**



**Prepared for:**

**Aspen Environmental Group  
235 Montgomery Street, No. 935  
San Francisco, CA 94104  
(415) 955-4775 x 203**

**Contact: Susan V. Lee, Vice President  
SLee@aspeneg.com**

**Prepared by:**

**AMEC Earth & Environmental, Inc.  
3120 Chicago Avenue, Suite 110  
Riverside, CA 92507  
(951) 369-8060  
(FAX) 369-8035**

**Report Author: Stephen J. Myers  
Wildlife Biologist/Ornithologist  
stephen.j.myers@amec.com**

**Report Date: 19 August 2011**

**AMEC Project No. 11-554-00460**

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APPENDIX B	DESERT HARVEST SOLAR PROJECT BIRD SPECIES LIST

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## 1.0 INTRODUCTION

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AMEC Earth & Environmental, Inc. (AMEC) was contracted by Aspen Environmental Group (Aspen) to conduct avian point count surveys during winter and spring of 2011 for the proposed Desert Harvest photovoltaic solar energy project located in unincorporated Riverside County California. The proposed project consists of the development of a 100-150 mega-watt photovoltaic panel solar power plant. These surveys were conducted to comply with requirements of the Bureau of Land Management (BLM) for renewable energy projects.

## 2.0 PROJECT LOCATION AND DESCRIPTION

---

The Desert Harvest project site is located on public lands administered by the BLM in unincorporated Riverside County, approximately 6 miles north of Desert Center, California (Township 4 South, Range 15 East, Sections 25, 26, 27, USGS 7.5' *Victory Pass & East of Victory Pass* quadrangles)(see Figure 1). The applicant, enXco Development Corporation (enXco) proposes to build a 100-150 mega-watt (MW) solar power generating plant incorporating thin-film photovoltaic panels (enXco 2010). The serialized application number assigned by the BLM for this project is 049491. The Right of Way Application consists of two non-contiguous parcels (see Figure 2). The eastern parcel is 1,055 acres and the western parcel is 270 acres.

Site topography is mostly flat with elevations ranging from 583 to 675 feet above sea level. Soils vary from sandy alluvium to hard packed desert pavement. Onsite ephemeral drainages flow southeasterly towards Desert Center at a slope of less than 1% (enXco 2010).

Surrounding land uses include undeveloped natural open space to the west, north and south. Some of the lands to the southeast of the site were converted to agricultural uses (jojoba [*Simmondsia chinensis*] farming) in the past but now appear to be abandoned.

## 3.0 METHODS

---

Field survey methods were derived and adapted from the following sources and approved prior to initiation of point count surveys by the BLM Desert District Office (L. LaPré, *in litt.*):

- BLM Solar Facility Point Count Protocol (2009);
- Managing and Monitoring Birds Using Point Counts, (Ralph et al. 1995)

The BLM point count protocol is as follows:

- One point count transect per square mile
- Eight point count locations per transect
- Point counts must be at least 250 meters apart
- Conduct point counts one day per week for four consecutive weeks between March and April (breeding)

- Conduct point counts one day per week for four consecutive weeks between November and January (wintering)
- Conduct point counts during the four hour period beginning at sunrise on any given date
- Each point count shall be ten minutes long, with all birds recorded within a 100 meter radius
- Concentrate the point count stations in areas where there will be birds (washes, high vegetation areas, etc.)

The project site is 1,325 acres, or 45 acres in excess of two sections. AMEC contacted Dr. Lawrence F. LaPré of the BLM regarding the number of transects necessary for this project site. Dr. LaPré stated that two transects of eight point count stations each was adequate (pers. comm. with S. Myers).

The point count locations were established in the field on 27 December 2010 by Stephen J. Myers and Chet McGaugh. As specified in the BLM protocol, the points were placed in the most suitable areas for birds (e.g., washes and relatively high density vegetation areas). Aerial photographs were examined in order to determine the most likely areas of well developed habitat. These areas were walked, and points were established at locations with good visibility. Many of the point count stations were located within or adjacent to washes that are dominated by ironwood (*Olneya tesota*), with lesser amounts of smoketree (*Psoralea argophylla*), blue palo verde (*Parkinsonia florida*), and catclaw (*Acacia greggii*). Several of the points were established at or just outside the edge of wash habitat in order to sample the adjacent areas dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Each point was captured on a hand-held Global Positioning System unit, and marked with wooden stakes (approximately 2 feet tall) driven into the ground. Each stake was further marked with brightly-colored flagging in order to maximize visibility. Each point count station was assigned an identifying number (1 through 16). Photo 1 shows a typical point count location.

Conducting point counts on the two transects (16 stations) during the required 4-hour window required two “person-days” (mornings) to complete each weekly series of counts. Access and logistics resulted in a division of labor whereby the number of points visited by each ornithologist varied from seven to nine per morning. Table 1 includes the surveyors, survey dates, times, and weather variables.

**Table 1.**  
**Desert Harvest Solar Project Point Count Survey (2011) Data.**

Date	Surveyor	Point Numbers	Time	Temperature (°F)	Cloud Cover (%)	Wind Speed (mph)
Winter Season Survey #1						
4 January	CM	1-5, 9-10	0659-1000	39-50	0	0-5
4 January	SJM	6-8, 11-16	0709-0950	39-50	0	0-5
Winter Season Survey #2						
10 January	CM	9-16	0715-0930	50-63	20	0-1
10 January	SJM	1-8	0700-0957	50-63	20	0-1
Winter Season Survey #3						
17 January	SJM	9-16	0654-0905	58-69	0	0-2
18 January	SJM	1-8	0657-1005	58-72	0	1-4
Winter Season Survey #4						
24 January	CM	1-8	0650-1005	44-65	0	0-1
24 January	SJM	9-16	0654-1001	44-64	0	0-1
Nesting Season Survey #1						
30 March	JFG	6-8, 11-16	0818-1112	65-82	20	0-12
30 March	CM	1-5, 9-10	0813-1032	65-82	20	0-12
Nesting Season Survey #2						
5 April	CM	6-8, 11-16	0738-0952	58-78	20	0-2
5 April	SJM	1-5, 9-10	0659-0930	57-77	10	1-2
Nesting Season Survey #3						
14 April	JFG	1-5, 9-10	0715-1008	55-72	0	3-12
14 April	SJM	6-8, 11-16	0701-0927	55-70	0	8
Nesting Season Survey #4						
28 April	CM	1-5, 9-10	0722-0900	71-84	0	0-1
28 April	SJM	6-8, 11-16	0714-0938	70-84	0	2-6

Key to Surveyors: JFG = John F. Green, CM = Chet McGaugh, SJM = Stephen J. Myers

During each visit, the surveyors recorded all birds detected during the 10-minute count period at each point count station. In addition, the surveyors noted any other bird species that were encountered on the project site while walking or driving to and from the point count stations. A complete list of bird species detected during this study is included as Appendix 2.

## 4.0 RESULTS

### Winter Season Point Counts

Sixty-six individual birds were detected during the winter season point counts, for a mean of 1.03 birds per point count (66 birds divided by [16 points X 4 counts]). Verdin (*Auriparus flaviceps*) was the most frequently encountered and numerous species detected during the winter, with 22 birds (33% of all birds detected, and detected on 30% of all counts). Fourteen species were detected during the winter counts (see Tables 2 through 5).

### Nesting Season Point Counts

During the nesting season counts, 135 individual birds were detected (24 species) (see Tables 6 through 9). The mean number of birds per count during the nesting season was 2.11. Verdin was the most numerous and frequently detected species during nesting season (35 birds, or

26% of all birds detected, detected on 44% of counts). Ash-throated Flycatcher (*Myiarchus cinerascens*) [29 birds] and Loggerhead Shrike (*Lanius ludovicianus*) [12 birds] were the next most numerous birds during nesting season.

Several migratory species (which do not nest in the area of the project) were noted during the nesting season point counts, including Vaux's Swift (*Chaetura vauxi*), Gray Flycatcher (*Empidonax wrightii*), Violet-green Swallow (*Tachycineta thalassina*), Tree Swallow (*Tachycineta bicolor*), Cliff Swallow (*Petrochelidon pyrrhonota*), Barn Swallow (*Hirundo rustica*), and Blue-gray Gnatcatcher (*Polioptila caerulea*).

#### Incidental Observations

Common Ravens (*Corvus corax*) were frequently detected during and between point counts during both winter and nesting season. However, almost all ravens were observed at a distance, with only four individuals recorded within the 100 meter point count radius.

A total of 45 bird species was detected during the study, including the winter season, and nesting season point count data and incidental observations made during both seasons (see Appendix 2).



**Figure 1. A typical point count station, showing the wooden stake marker (Point #3).**

**Table 2.**  
**Desert Harvest Solar Project: Avian Point Counts, Winter Season, Survey #1.**

Species	Point Count Stations															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ladder-backed Woodpecker	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Say's Phoebe	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-
*Loggerhead Shrike	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Horned Lark	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-
Verdin	-	-	-	-	-	1	1	1	1	-	1	1	-	1	-	-
Blue-gray Gnatcatcher	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
Black-tailed Gnatcatcher	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-
Ruby-crowned Kinglet	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Black-throated Sparrow	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
House Finch	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-

**Table 3.**  
**Desert Harvest Solar Project: Avian Point Counts, Winter Season, Survey #2.**

Species	Point Count Stations															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Say's Phoebe	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
*Loggerhead Shrike	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Verdin	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-
Black-tailed Gnatcatcher	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Black-throated Sparrow	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
House Finch	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table 4.**  
**Desert Harvest Solar Project: Avian Point Counts, Winter Season, Survey #3.**

Species	Point Count Stations															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ladder-backed Woodpecker	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
*Loggerhead Shrike	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-
Common Raven	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
Verdin	1	-	-	-	-	1	-	1	1	1	1	-	-	-	-	1
Black-tailed Gnatcatcher	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Phainopepla	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Yellow-rumped Warbler	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-
Black-throated Sparrow	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Lesser Goldfinch	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-

**Table 5. Desert Harvest Solar Project: Avian Point Counts, Winter Season, Survey #4.**

Species	Point Count Stations															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Red-tailed Hawk	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Say's Phoebe	1	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-
*Loggerhead Shrike	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
Verdin	-	-	-	-	-	-	-	-	2	-	-	-	1	-	-	2
Blue-gray Gnatcatcher	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Black-tailed Gnatcatcher	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-
American Pipit	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Yellow-rumped Warbler	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-

**Table 6. Desert Harvest Solar Project: Avian Point Counts, Nesting Season, Survey #1.**

Species	Point Count Stations															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
American Kestrel	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Mourning Dove	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-
Gray Flycatcher	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Ash-throated Flycatcher	-	-	-	-	1	1	2	-	-	-	3	-	2	-	-	1
*Loggerhead Shrike	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Horned Lark	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2
Violet-green Swallow	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
Verdin	-	-	-	-	1	-	1	-	1	-	1	1	-	-	-	-
Black-tailed Gnatcatcher	-	-	-	-	-	2	-	-	-	-	-	2	-	1	-	-
Yellow-rumped Warbler	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
White-crowned Sparrow	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
House Finch	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-

**Table 7. Desert Harvest Solar Project: Avian Point Counts, Nesting Season, Survey #2.**

Species	Point Count Stations															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
White-winged Dove	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mourning Dove	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Ash-throated Flycatcher	-	-	-	-	2	2	-	-	-	-	1	-	2	1	1	-
*Loggerhead Shrike	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
Horned Lark	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Tree Swallow	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Verdin	1	-	-	-	-	-	2	-	-	-	1	-	1	1	-	1
Bewick's Wren	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-

**Table 8.**  
**Desert Harvest Solar Project: Avian Point Counts, Nesting Season, Survey #3.**

Species	Point Count Stations															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Turkey Vulture	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Unidentified hummingbird	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ladder-backed Woodpecker	-	-		1	-	-	-	-	-	-	-	-	-	-	-	-
Ash-throated Flycatcher	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-
*Loggerhead Shrike	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-
Common Raven	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cliff Swallow	-	-	3		-	-	-	-	-	-	-	-	-	-	-	-
Verdin	-	-	-	-	1	-	1	-	1	-	1		2	1		1
Black-tailed Gnatcatcher	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Northern Mockingbird	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Yellow-rumped Warbler	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-
Scott's Oriole	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-

**Table 9.**  
**Desert Harvest Solar Project: Avian Point Counts, Nesting Season, Survey #4.**

Species	Point Count Stations															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
White-winged Dove	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Mourning Dove	-	2	1	-	-	-	-	1	-	-	1	-	1	-	-	-
Vaux's Swift	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-
Ladder-backed Woodpecker	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Ash-throated Flycatcher	1	-	-	1	2	-	-	2	1	-	1	-	-	-	-	-
*Loggerhead Shrike	-	-	-	-	1	-	-	1	-	1	-	2	-	-	-	1
Common Raven	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Barn Swallow	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Verdin	1	1	-	3	1	-	-	-	1	-	2	-	1	2	1	2
Bewick's Wren	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Black-tailed Gnatcatcher	-	2	-	-	-	1	-	1	-	-	-	-	-	1	-	-
Yellow-rumped Warbler	-	-	-	1	-	-	2	-	-	-	-	-	-	-	-	-
Bullock's Oriole	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

## 5.0 SPECIAL-STATUS BIRD SPECIES

---

Several special-status bird species were encountered during this study, or are known from the area:

- **Swainson's Hawk** – On 14 April 2011, John Green observed one Swainson's Hawk (*Buteo swainsoni*) flying approximately 1000 feet west of point #3. This bird was a migrant. Swainson's Hawks migrate on a broad front, both spatially and temporally, across much of southern California, including the coastal slope as well as the deserts. The nearest known nesting location is the Antelope Valley, at the western end of the Mojave Desert (Bechard et al. 2010). Swainson's Hawk is listed by the State of California as Threatened.
- **Gila Woodpecker** – On 27 December 2010, a Gila Woodpecker (*Melanerpes uropygialis*) was observed by Chet McGaugh and Stephen J. Myers during the point count station setup. This bird was seen in ironwoods near points #9 and #10. No other observations of this species were made during the study. Grinnell and Miller (1944) stated that "availability of diggable tree-trunks for nesting seems to be [the] primary factor for presence" of this species. It seems unlikely that ironwoods would be suitable for nesting due to their extremely dense wood, but Gila Woodpeckers have also been known (rarely) to excavate cavities in palo verde (Bent 1939). Since blue palo verdes are uncommonly scattered throughout the Desert Harvest project site, there is at least a low probability that they nest on or near the site. A sighting of Gila Woodpecker was reported on 28 September 2010 from the Desert Sunlight Project, approximately 2 miles west of the Desert Harvest site (eBird data). The Gila Woodpecker is listed by the State of California as Endangered.
- **Vermilion Flycatcher** – This species is known as a nesting bird at nearby Lake Tamarisk (C. McGaugh pers. comm., Myers 2008), approximately three miles south of the project site. Vermilion Flycatchers (*Pyrocephalus rubinus*) were not observed on the site but use habitats such as riparian woodland, arid scrub, farms lands, agricultural areas, parks, and golf courses (Myers 2008), and they could nest within the wash habitats on the project site. The Vermilion Flycatcher is a California Department of Fish and Game (CDFG) "Species of Special Concern."
- **Loggerhead Shrike** – Loggerhead Shrikes were recorded 11 times during point counts (a total of 14 birds). They were recorded at point count station numbers 1, 3, 4, 5, 8, 9, 10, 11, 12, and 16, indicating a broad distribution across the project area. The Loggerhead Shrike is a California Department of Fish and Game "Species of Special Concern."
- **Lucy's Warbler** – On 14 April 2011, two singing male Lucy's Warblers (*Oreothlypis luciae*) were detected near the southwestern corner of the eastern project site parcel. These birds were heard and seen as Myers was accessing point count stations to the north. Lucy's Warbler is a California Department of Fish and Game "Species of Special Concern," and could nest on the project site. Grinnell and Miller (1944) noted that in California this species nests almost exclusively in mesquite thickets, and that they range only locally and temporarily into riparian habitats and into palo verdes and ironwoods.

Three other CDFG “Special Concern” species were detected during the *study*: Osprey (*Pandion haliaetus*), Sharp-shinned Hawk (*Accipiter striatus*), and Vaux’s Swift (*Chaetura vauxi*). The Sharp-shinned Hawk was seen on 10 January 2011, and was presumed to be a wintering bird. Nesting habitat for the Sharp-shinned Hawk is coniferous forest (Garrett and Dunn 1981). The other two species were spring migrants. Ospreys nest near bodies of water that provide abundant fish, which are their main prey items. In California, nesting Ospreys are restricted to the northern half of the state (Poole et al. 2004) Vaux’s Swift nests in coniferous forest in the Cascades, Sierra Nevada, and coast ranges south to Monterey and Kern counties (Hunter 2008). The special status afforded these species by CDFG only applies to nesting birds.

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Desert Harvest Solar Project  
Avian Point Counts in 2011  
Aspen Environmental Group  
19 August 2011

**APPENDIX A**

**DESERT HARVEST SOLAR PROJECT  
MAPS**

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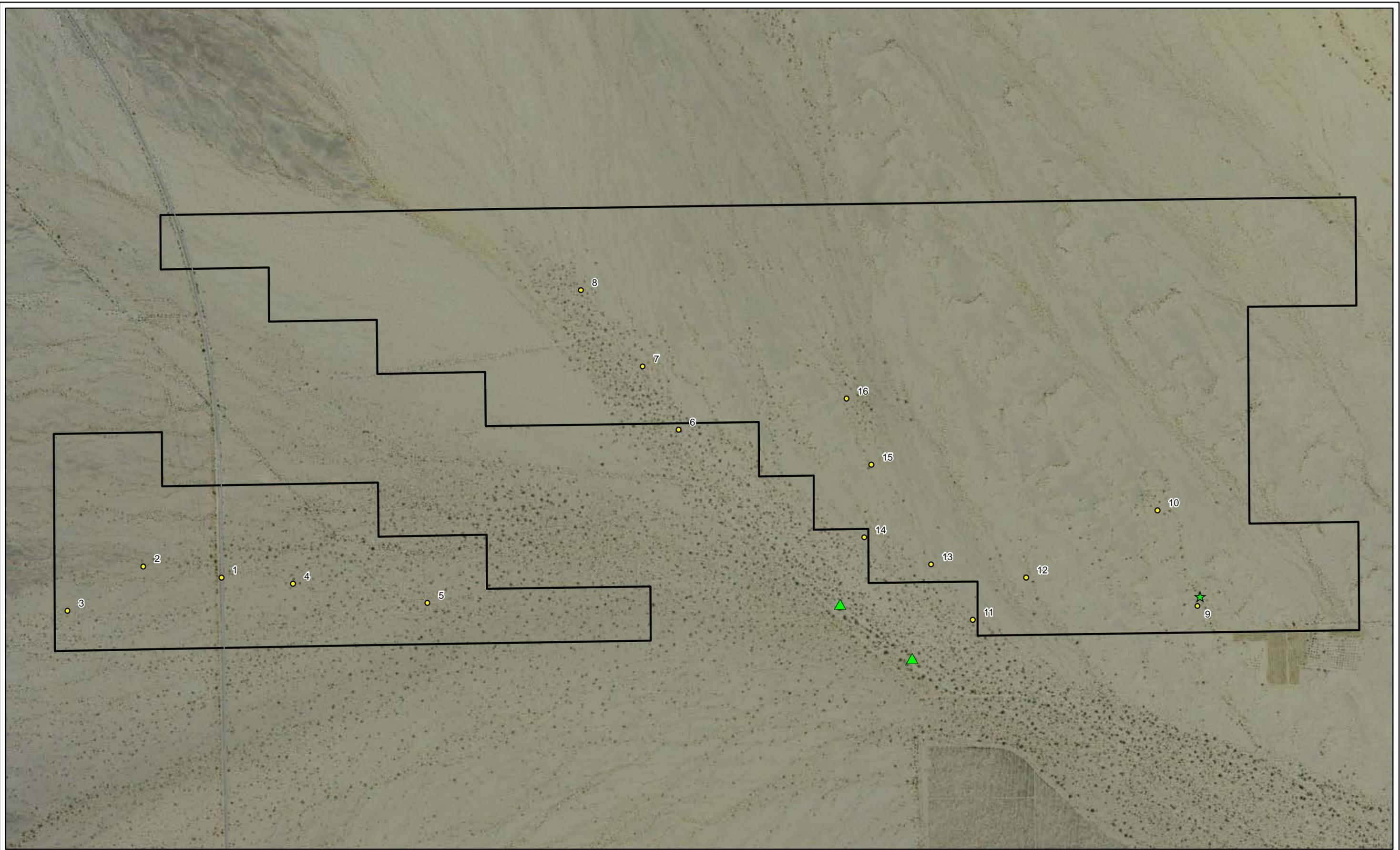
**Desert Harvest  
Project Site**

**Regional Location  
Desert Harvest Project**

**FIGURE**

**1**

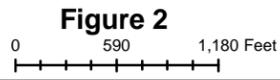




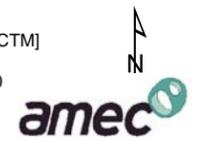
Project Boundary\*  
 ● Point Count Station\*\*  
★ Gila Woodpecker  
 ▲ Singing Lucy's Warbler

\*04/13/10 \*\*Loggerhead Shrike locations discussed in results section of report.

**Desert Harvest Solar Project**  
 Avian Point Count Stations & Sensitive Bird Species Locations



Data-  
 Projection: NAD\_1983\_California\_Transverse\_Mercator\_[CTM]  
 Resources: Boundary\_EagleMtn\_041310(ASPEN)  
 Path: S:\active projects\EnXco\Desert Harvest 1155400460  
 Survey: AMEC-12.27.10, 1.4.11  
 Date: 8/16/11



Desert Harvest Solar Project  
Avian Point Counts in 2011  
Aspen Environmental Group  
19 August 2011

## **APPENDIX B**

### **DESERT HARVEST SOLAR PROJECT BIRD SPECIES LIST**

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## APPENDIX B BIRD SPECIES LIST

[Note: This list includes species detected during point counts and during point count setup and access.  
Species detected during point counts are marked with a †.]

### BIRDS

#### New World Quail

Gambel's Quail

#### New World Vultures

Turkey Vulture †

#### Ospreys

Osprey

#### Hawks, Harriers, & Eagles

Sharp-shinned Hawk

Swainson's Hawk

Red-tailed Hawk †

#### Falcons

American Kestrel †

#### Gulls, Terns, & Skimmers

Unidentified gull (distant)

#### Pigeons & Doves

Eurasian Collared-Dove (nonnative)

White-winged Dove †

Mourning Dove †

#### Cuckoos & Allies

Greater Roadrunner

#### Swifts

Vaux's Swift †

#### Hummingbirds

Anna's Hummingbird

#### Woodpeckers

Gila Woodpecker

Ladder-backed Woodpecker †

Northern Flicker

### AVES

#### Odontophoridae

*Callipepla gambelii*

#### Cathartidae

*Cathartes aura*

#### Pandionidae

*Pandion haliaetus*

#### Accipitridae

*Accipiter striatus*

*Buteo swainsoni*

*Buteo jamaicensis*

#### Falconidae

*Falco sparverius*

#### Laridae

*Larus* sp.

#### Columbidae

*Streptopelia decaocto*

*Zenaida asiatica*

*Zenaida macroura*

#### Cuculidae

*Geococcyx californianus*

#### Apodidae

*Chaetura vauxi*

#### Trochilidae

*Calypte anna*

#### Picidae

*Melanerpes uropygialis*

*Picoides scalaris*

*Colaptes auratus*

**Tyrant Flycatchers**

Gray Flycatcher †  
Say's Phoebe †  
Ash-throated Flycatcher †

**Shrikes**

Loggerhead Shrike †

**Jays, Magpies, & Crows**

Common Raven †

**Larks**

Horned Lark †

**Swallows**

Tree Swallow †  
Violet-green Swallow †  
Cliff Swallow †  
Barn Swallow †

**Penduline Tits & Verdins**

Verdin †

**Wrens**

Bewick's Wren †

**Kinglets**

Ruby-crowned Kinglet †

**Old World Warblers & Gnatcatchers**

Blue-gray Gnatcatcher †  
Black-tailed Gnatcatcher †

**Mockingbirds, Thrashers, & Allies**

Northern Mockingbird †

**Wagtails & Pipits**

American Pipit †

**Silky-Flycatchers**

Phainopepla †

**Parulidae**

Orange-crowned Warbler  
Lucy's Warbler  
Yellow-rumped Warbler †

**Tyrannidae**

*Empidonax wrightii*  
*Sayornis saya*  
*Myiarchus cinerascens*

**Laniidae**

*Lanius ludovicianus*

**Corvidae**

*Corvus corax*

**Alaudidae**

*Eremophila alpestris*

**Hirundinidae**

*Tachycineta bicolor*  
*Tachycineta thalissina*  
*Petrochidon pyrrhonota*  
*Hirunda rustica*

**Remizidae**

*Auriparus flaviceps*

**Troglodytidae**

*Thryomanes bewickii*

**Regulidae**

*Regulus calendula*

**Sylviidae**

*Polioptila caerulea*  
*Polioptila melanura*

**Mimidae**

*Mimus polyglottos*

**Motacillidae**

*Anthus rubescens*

**Ptilogonatidae**

*Phainopepla nitens*

**Wood-Warblers**

*Oreothlypis celata*  
*Oreothlypis luciae*  
*Setophaga coronata*

**Emberizids**

Brewer's Sparrow  
Black-throated Sparrow †  
White-crowned Sparrow †

**Blackbirds & Allies**

Bullock's Oriole  
Scott's Oriole

**Finches**

House Finch †  
Lesser Goldfinch †

**Emberizidae**

*Spizella breweri*  
*Amphispiza bilineata*  
*Zonotrichia leucophrys*

**Icteridae**

*Icterus bullockii*  
*Icterus parisorum*

**Fringillidae**

*Carpodacus mexicanus*  
*Spinus psaltria*

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## **Appendix C.5**

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Aspen Fall 2010 Botanical Survey Memo



201 North First Ave., Suite 102, Upland, CA 91786  
Tel. 909-949-3686, [www.aspeneg.com](http://www.aspeneg.com)

**PROJECT MEMORANDUM**  
**ENXCO DESERT HARVEST PROPOSED SOLAR PROJECT**

**To:** Ian Black, enXco  
**From:** Scott D. White, Aspen Project Manager  
**Date:** April 18, 2011  
**Subject:** Desert Harvest project site, fall 2010 botanical surveys

This memorandum describes methods and results of Aspen's late-season (fall 2010) botanical surveys at the proposed Desert Harvest solar project site. These late-season surveys cover the entire Right of Way Application (consisting of two discontinuous parcels, described below). The larger, eastern parcel was surveyed for rare plants during spring 2010 by AMEC Earth & Environmental Inc., as documented in *Desert Harvest Spring 2010 Focused Special-Status Plant Species Survey* (AMEC 2011). Two special status plants were reported on the site: Emory's crucifixion thorn (*Castela emoryi*) and Utah vine milkweed (*Funastrum [=Cynanchum] utahense*). The AMEC report recommended fall surveys for late flowering glandular ditaxis (*Ditaxis claryana*) and California ditaxis (*D. serrata* var. *californica*). This memorandum serves as a supplement to the AMEC spring report and focuses on these two fall-blooming target species. Conservation status, habitat characteristics, and probability of occurrence for special status plants on the Desert Harvest site are summarized by AMEC (2011). Each of these species is ranked as a special status by California Department of Fish and Game (CDFG) or California Native Plant Society (CNPS). But none of the species documented on the site or targeted for these field surveys are listed, proposed for listing, or candidates for listing as threatened or endangered, nor are they managed by the Bureau of Land Management (BLM) as sensitive species.

The Desert Harvest site is located on public lands administered by BLM in unincorporated Riverside County, approximately 6 miles north of Desert Center, California (see Figure 1 in AMEC 2011). The Right of Way Application consists of two non-contiguous parcels (see Figure 1 in this memorandum). The eastern parcel is 1,057 acres and the western parcel is 270 acres. The AMEC surveys in spring 2010 covered only the larger, eastern parcel. The late-season surveys described in this memorandum covered both parcels. Follow-up spring season surveys on the smaller, western parcel are now underway. Upon completion of the 2011 spring field surveys, Aspen will provide a full report describing the methods and results of all botanical surveys at the Desert Harvest site.

The primary target species for these field surveys were glandular ditaxis and California ditaxis. In addition, all special status plants included in Appendix A of the AMEC (2011) report were considered secondary target species, though most of these would be unlikely to be found in flower during fall. Further, the distribution and abundance of many fall-flowering species in the California desert is incompletely documented in literature due to a historic emphasis on spring, rather than fall, field work. Yet a significant proportion of the flora is made up of annual species that germinate in response to summer rains, or perennial herbs that may flower at any time of year, depending on rainfall (Shreve and Wiggins 1964; Phillips and Comus 2000). Therefore, these late-season field surveys were conducted to find and identify as many species as possible, to maximize the likelihood that species not known from the area, or not included on a list of "target species" would be documented if they occur on the site. This approach to field work conforms to CDFG (2009) and BLM (2009) guidelines recommending "floristic" botanical surveys and provides the most thorough practicable botanical inventory of the Right of Way Application.



Average annual rainfall at the Eagle Mountain weather station, about 2.5 miles from the site, is 3.68 inches (WRCC 2011). On average, August is the wettest month, though WRCC reported no measureable rainfall at the station in August 2010. Average precipitation at the Eagle Mountain station during the months of July – October is 1.35 inches (37% of the average annual total). In 2010, there was a total of 1.23 inches of rainfall during this period, almost all of which fell during October.

## METHODS

Before the field survey, we reviewed available literature to identify special status plants known from the project site and vicinity. Literature included California Natural Diversity Data Base (CDFG 2010, USGS Victory Pass, East of Victory Pass, Desert Center, Corn Spring, Coxcomb Mountains, Pinto Wells, Placer Canyon, Buzzard Spring, West of Palen Pass, Palen Lake and Sidewinder Well topographic quads), California Native Plant Society's *Online Inventory of Rare and Endangered Vascular Plants of California 8<sup>th</sup> ed.* (2010, for the same quads) and the preliminary results of AMEC's spring 2010 field surveys.

Field survey dates were based on known collection dates for glandular ditaxis and California ditaxis according to vouchered specimens (Consortium of California Herbaria 2010) and on 2010 late-season rainfall dates (primarily October). Aspen biologists Justin Wood and Dustin Ray conducted field surveys on the following dates: 21 Oct, 22 Oct, 1 Nov and 2 Nov 2010.

Field methods followed the “intuitive controlled survey” methods, described by BLM (2009). Wood and Ray carried out a complete survey of washes and any low-lying areas throughout the two parcels where runoff from summer rains would have been most concentrated, and a less intense survey of upland bajada and desert pavement surfaces. There were no summer annuals and only few flowering perennials on these upland surfaces, and field botanists concluded that there was little likelihood of finding special status plants or more common species not documented in washes or during earlier field surveys.

All plant species observed were identified in the field or collected for later identification. Plants were identified using keys, descriptions, and illustrations in Abrams (1923-1960), Shreve and Wiggins (1964), Munz (1974), Hickman (ed., 1993), applicable volumes of the Flora of North America (1993+), Baldwin et al. (eds., 2002), and other regional references. All species noted on the alignment are listed in the attached species list. In conformance with California Department of Fish and Game guidelines (2009), surveys were (a) conducted during flowering seasons for the late-flowering special status plants known from the area, (b) floristic in nature, (c) consistent with conservation ethics, (d) systematically covered all habitat types on the Right of Way, and (e) well documented, by this report and by voucher specimens to be deposited at Rancho Santa Ana Botanic Garden. Locations of special status plants will be reported to the CDFG Natural Diversity Data Base (copies of report forms attached).

## RESULTS

Very few plants were in flower during the fall survey period. Rainfall during July – September has been well below average and summer annuals had evidently not germinated or persisted. The 1.17 inches of rain in October 2010 may have been too late to initiate germination among summer annual species.

Vegetation on the western site (not surveyed during spring 2010) is similar to that of the eastern site, with Creosote Bush-White Burr Sage Scrub (Sawyer et al. 2009) predominating. Intermixed with the Creosote Bush-White Burr Sage Scrub are areas of Smoke Tree Woodland. Both of

these vegetation types are described in AMEC (2011) and the Manual of California Vegetation (Sawyer et al. 2009).

Within the smaller, western project area, we located 15 individuals of one special status species, Emory's crucifixion thorn. It occurred primarily in a single stand (see Figure 1). Three other individuals were reported by AMEC (2011) in the eastern project area. All occurrences of Emory's crucifixion thorn reported by AMEC and Aspen are shown in Figure 1. Emory's crucifixion thorn is assigned to California Rare Plant Rank (CRPR, formerly CNPS List) 2.3 (rare, threatened, or endangered in California, but more common elsewhere). It is not managed by BLM as a sensitive species (BLM 2009).

We did not locate either target species, glandular ditaxis and California ditaxis on either of the two parcels, although we found two closely related species, common ditaxis (*Ditaxis neomexicana*) and Yuma ditaxis (*D. serrata* var. *serrata*) throughout the larger, eastern parcel. Neither of these species is ranked by BLM, USFWS, CDFG or CNPS as a special status species. Specimens of both species have been deposited in the Herbarium at Rancho Santa Ana Botanic Garden as permanent documentation.

During our field surveys of the eastern Right of Way parcel, we visited the location where Utah vine milkweed was mapped by AMEC. At this location, we found a closely related species, hairy milkweed (*Funastrum* [= *Sarcostemma*] *hirtellum*), but we did not find Utah vine milkweed. We identified the specimen by flower color and technical characters of flower structure (Baldwin et al. 2002). A specimen has been deposited in the Herbarium at Rancho Santa Ana Botanic Garden as permanent documentation. It is possible that both species occur at approximately the same location, or that the report of Utah vine milkweed may have been based on a misidentification of the similar hairy milkweed. Hairy milkweed has no special conservation status. Utah vine milkweed is assigned to CRPR 4.2 (limited distribution, "watch list"). It is not managed by BLM as a sensitive species (BLM 2009).

Please contact me any time to discuss or clarify any of the information in this memorandum.

Encl.

1. Literature Cited
2. Figure 1: Occurrences of Crucifixion Thorn within Desert Harvest proposed sites.
3. Appendix 1: Species List
4. Appendix 2: CNDDDB Search Results and Report Form

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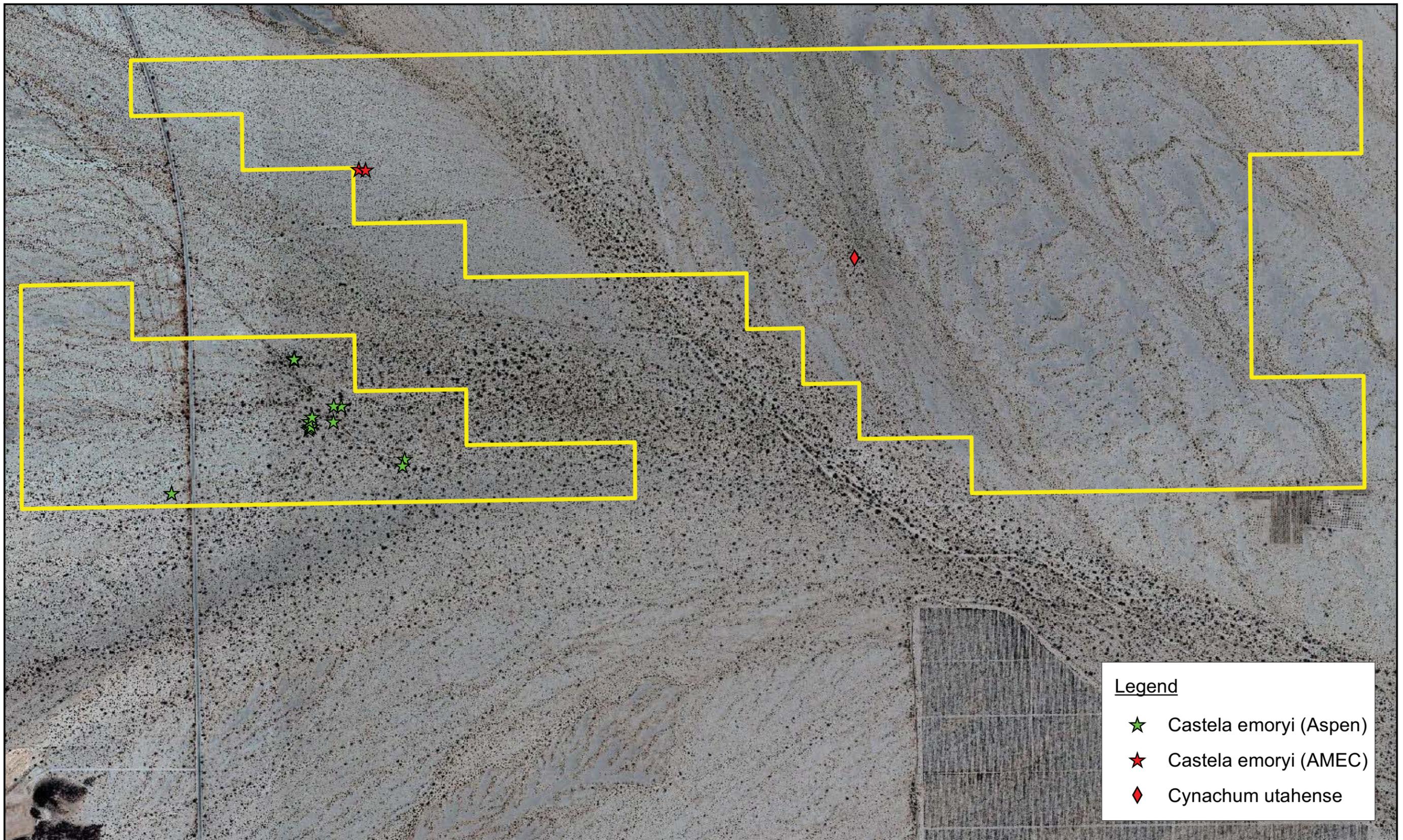
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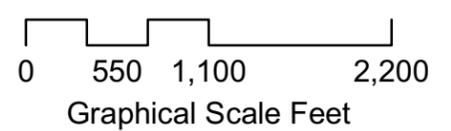


**Legend**

- ★ Castela emoryi (Aspen)
- ★ Castela emoryi (AMEC)
- ◆ Cynachum utahense



Scale: 1" = 1,100'  
 Date: 4/18/2011



**Figure 1: Special-status plant occurrences within Desert Harvest Right of Way**

Appendix 1: enXco Desert Harvest Proposed Solar Site Species List

Alien species indicated by asterisk, special status species indicated by two asterisks. This list includes only species observed on the site. Others may have been overlooked or unidentifiable due to season (amphibians are active during rains, reptiles during summer, some birds (and bats) migrate out of the area for summer or winter, some mammals hibernate, many plants are identifiable only in spring). Plants were identified using keys, descriptions, and illustrations in Abrams (1923-1960), Baldwin et al. (2002), and Munz (1974). Taxonomy and nomenclature generally follow Baldwin. Wildlife taxonomy and nomenclature generally follow Stebbins (2003) for amphibians and reptiles, AOU (1998) for birds, and Jones et al. (1992) for mammals. Specimens donated as vouchers to the UC

<b>Latin Name</b>	<b>Common Name</b>	<b>Voucher</b>
AMARANTHACEAE	AMARANTH FAMILY	
<i>Tidestromia oblongifolia</i> ( <i>T. suffruticosa</i> var. <i>oblongifolia</i> )	Honeysweet	3038
ASCLEPIADACEAE	MILKWEED FAMILY	
<i>Asclepias erosa</i>	Desert milkweed	2999
<i>Asclepias subulata</i>	Rush milkweed	3029
<i>Sarcostemma hirtellum</i>	Rambling milkvine	3022
ASTERACEAE	ASTER FAMILY	
<i>Ambrosia dumosa</i>	White bursage, burrobush	
<i>Bebbia juncea</i>	Sweetbush	3023
# <i>Chaenactis carphoclina</i>	Pincushion	
# <i>Chaenactis fremontii</i>	Fremont pincushion	
# <i>Chaenactis stevioides</i>	Broad-flowered pincushion	
<i>Encelia actoni</i>	Acton brittlebush	
<i>Encelia farinosa</i>	Brittlebush	
<i>Encelia frutescens</i>	Rayless encelia	3060
# <i>Gerea canescens</i>	Desert sunflower	
# <i>Hymenoclea salsola</i>	Cheesebush	
# <i>Malacothrix glabrata</i>	Desert dandelion	
# <i>Monoptilon bellioides</i>	Desert star	
<i>Palafoxia arida</i>	Spanish needles	3003
<i>Pectis papposa</i>	Chinchweed	2997
<i>Perityle emoryi</i>	Emory rock-daisy	2994
# <i>Psathrotes ramosissima</i>	Velvet rosettes, turtleback	
# <i>Rafinesquia neomexicana</i>	Desert chicory	
BORAGINACEAE	BORAGE FAMILY	
<i>Cryptantha angustifolia</i>	Narrowleaf cryptantha	
<i>Cryptantha barbiger</i>	Bearded cryptantha	
# <i>Cryptantha dumetorum</i>	Twining cryptantha	
# <i>Pectocarya platycarpa</i>	Broad-fruited comb-bur	
# <i>Pectocarya recurvata</i>	Recurved pectocarya	
# <i>Tiquilia plicata</i> ( <i>Coldenia plicata</i> )	Plicate tiquilia	
BRASSICACEAE	MUSTARD FAMILY	
* <i>Brassica tournefortii</i>	Sahara mustard, wild turnip	
<i>Lepidium spp.</i>	Unid. pepper-grass	
# <i>Lepidium lasiocarpum</i> (?)	Sand peppergrass	

# denotes species found during spring 2010 Amec surveys.

Appendix 1: enXco Desert Harvest Proposed Solar Site Species List

CACTACEAE	CACTUS FAMILY	
<i>Ferocactus cylindraceus</i>	California barrel cactus	
<i>Opuntia basilaris v. basilaris</i>	Beavertail cactus	
<i>Cylindropuntia echinocarpa</i>	Silver cholla	
<i>Cylindropuntia ramosissima</i>	Pencil cholla	
# <i>Achyrionychia cooperi</i>	Onyx flower	
# <i>Chenopodium sp.</i>	Unidentified goosefoot	
CUCURBITACEAE	GOURD FAMILY	
<i>Brandegea bigelovii</i>	Brandegea	
EUPHORBIACEAE	SPURGE FAMILY	
# <i>Chamaesyce albomarginata</i> ( <i>Euphorbia albomarginata</i> )	Rattlesnake spurge	
<i>Chamaesyce micromera</i>	Sonoran sandmat	3006
<i>Chamaesyce polycarpa</i>	Sand mat	3004
<i>Croton californicus</i>	California croton	3024
# <i>Ditaxis lanceolata</i>	Narrow-leaved ditaxis	
<i>Ditaxis neomexicana</i>	Common ditaxis	3030
<i>Ditaxis serrata</i>	Yuma ditaxis	3000
# <i>Stillingia linearifolia</i>	Linear-leaved stillingia	
<i>Stillingia spinulosa</i>	Annual stillingia	2993
FABACEAE	PEA FAMILY	
<i>Acacia greggii</i>	Catclaw acacia	
<i>Cercidium floridum</i>	Blue palo verde	3059
<i>Dalea mollis</i>	Silk dalea	3027
# <i>Dalea mollissima</i>	Rust dalea	
# <i>Lupinus arizonicus</i>	Arizona lupine	
# <i>Lupinus sp.</i>	Unid. annual lupine	
# <i>Marina parryi</i>	Parry dalea	
<i>Olneya tesota</i>	Desert ironwood	
# <i>Parkinsonia florida</i>	Blue palo verde	
<i>Psoralea emoryi</i> ( <i>Dalea emoryi</i> )	Emory indigo-bush, dye-weed	3002
<i>Psoralea schottii</i> ( <i>Dalea schottii</i> )	Indigo-bush	
# <i>Fouquieria splendens</i>	Ocotillo	
KRAMERIACEAE	KRAMERIA FAMILY	
<i>Krameria grayii</i>	White rhatany	3063
LAMIACEAE	MINT FAMILY	
<i>Hyptis emoryi</i>	Desert lavender	3062
# <i>Eremalche rotundifolia</i>	Desert fivespot	
MARTYNIACEAE	UNICORN PLANT FAMILY	
<i>Proboscidea althaeifolia</i>	Unicorn plant	
NYCTAGINACEAE	FOUR O'CLOCK FAMILY	
# <i>Abronia villosa var. villosa</i>	Sand verbena	
<i>Allionia incarnata</i>	Trailing windmills	2992
ONAGRACEAE	EVENING PRIMROSE FAMILY	
<i>Camissonia boothii</i>	Desert primrose	

# denotes species found during spring 2010 Amec surveys.

Appendix 1: enXco Desert Harvest Proposed Solar Site Species List

<i>ssp. desertorum</i>		
<i>Camissonia claviformis</i>	Clavate evening primrose	
# <i>Camissonia sp.</i>	Unidentified primrose	
PAPAVERACEAE	POPPY FAMILY	
# <i>Eschscholzia minutiflora</i>	Small-flowered poppy	
PLANTAGINACEAE	PLANTAIN FAMILY	
<i>Plantago ovata</i>	Desert plantain	
POLEMONIACEAE	PHLOX FAMILY	
# <i>Gilia latifolia</i>	Broad-leaved gilia	
# <i>Loeseliastrum schottii</i>	Schott's langloisia	
POLYGONACEAE	BUCKWHEAT FAMILY	
# <i>Chorizanthe brevicornu</i>	Brittle spine-flower	
# <i>Chorizanthe corrugata</i>	Wrinkled spineflower	
<i>Chorizanthe rigida</i>	Rigid spine-flower	3061
<i>Eriogonum deflexum</i>	Skeleton weed	2990
<i>Eriogonum pusillum</i>	Puny buckwheat	
# <i>Eriogonum reniforme</i>	Kidney-leaved buckwheat	
PORTULACACEAE	PURSLANE FAMILY	
<i>Calyptridium monandrum</i>	Common calyptridium	
# <i>Oligomeris linifolia</i>	Narrowleaf oligomeris	
SIMAROUBACEAE		
** <i>Castela emoryi</i>	Crucifixion thorn	2991
SOLANACEAE	NIGHTSHADE FAMILY	
<i>Datura discolor</i>	Jimsonweed, desert thorn-apple	3058
<i>Physalis crassifolia</i>	Thick-leaf ground cherry	2998
ZYGOPHYLLACEAE	CALTROP FAMILY	
# <i>Fagonia laevis</i>	Smooth-stem fagonia	
# <i>Fagonia pachyacantha</i>	Glandular fagonia	
<i>Kallstroemia californica</i>	California caltrop	3026
<i>Larrea tridentata</i>	Creosote bush	
# <i>Tribulus terrestris</i>	Puncture vine	
ARECACEAE	PALM FAMILY	
# <i>Phoenix dactylifera</i>	Date palm	
LILIACEAE	LILY FAMILY	
# <i>Calochortus sp.</i>	Unid. Mariposa lily	
# <i>Hesperocallis undulata</i>	Desert lily	
<i>Zigadenus brevibracteatus</i>	Desert zigadene	
POACEAE	GRASS FAMILY	
<i>Aristida californica</i>	California three-awn	2995
<i>Aristida purpurea</i>	Three-awn grass	
<i>Bouteloua aristidoides</i>	Needle grama	2996
<i>Pleuraphis rigida (Hilaria rigida)</i>	Big galleta	
* <i>Schismus barbatus</i>	Mediterranean schismus	

# denotes species found during spring 2010 Amec surveys.

Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 <i>Ammoselinum giganteum</i> desert sand-parsley	PDAP105020			G2G3	SH	2.3
2 <i>Astragalus insularis var. harwoodii</i> Harwood's milk-vetch	PDFAB0F491			G5T3	S2.2?	2.2
3 <i>Ayenia compacta</i> California ayenia	PDSTE01020			G4	S3?	2.3
4 <i>Castela emoryi</i> Emory's crucifixion-thorn	PDSIM03030			G2G3	S2S3	2.3
5 <i>Colubrina californica</i> Las Animas colubrina	PDRHA05030			G4	S2S3.3	2.3
6 <i>Coryphantha alversonii</i> Alverson's foxtail cactus	PDCAC0X060			G3	S3.2	4.3
7 <i>Ditaxis claryana</i> glandular ditaxis	PDEUP080L0			G4G5	S1	2.2
8 <i>Ditaxis serrata var. californica</i> California ditaxis	PDEUP08050			G5T2T3	S2	3.2
9 <i>Eriastrum harwoodii</i> Harwood's eriastrum	PDPLM030B1			G2	S2	1B.2
10 <i>Grusonia parishii</i> Parish's club-cholla	PDCAC0D2H0			G3G4	S2	2.2
11 <i>Koeberlinia spinosa ssp. tenuispina</i> slender-spined all-thorn	PDCPP05012			G4T4	S2.2	2.2
12 <i>Matelea parvifolia</i> spear-leaf matelea	PDASC0A0J0			G5?	S2.2	2.3
13 <i>Mentzelia puberula</i> Darlington's blazing star	PDLOA031F0			G4	S2	2.2
14 <i>Salvia greatae</i> Orocopia sage	PDLAM1S0P0			G2	S2	1B.3
15 <i>Selaginella eremophila</i> desert spike-moss	PPSEL010G0			G4	S2.2?	2.2
16 <i>Senna covesii</i> Cove's cassia	PDFAB491X0			G5?	S1	2.2
17 <i>Stylocline sonorensis</i> mesquite neststraw	PDAST8Y060			G3G5	SX	1A
18 <i>Teucrium cubense ssp. depressum</i> dwarf germander	PDLAM20032			G4G5T3T4	S2	2.2
19 <i>Wislizenia refracta ssp. palmeri</i> Palmer's jackass clover	PDCPP09015			G5T2T4	S2?	2.2

*For Office Use Only*

Source Code \_\_\_\_\_ Quad Code \_\_\_\_\_  
 Elm Code \_\_\_\_\_ Occ. No. \_\_\_\_\_  
 EO Index No. \_\_\_\_\_ Map Index No. \_\_\_\_\_

Date of Field Work (mm/dd/yyyy): 10/21/2010

**Reset**

## California Native Species Field Survey Form

**Send Form**

**Scientific Name:** Castela emoryi

**Common Name:** crucifixion thorn

**Species Found?**  Yes  No \_\_\_\_\_ If not, why? \_\_\_\_\_  
 Total No. Individuals 10 Subsequent Visit?  yes  no  
**Is this an existing NDDDB occurrence?** \_\_\_\_\_  no  unk.  
 Yes, Occ. # \_\_\_\_\_  
 Collection? If yes: 2991 RSA-POM  
 Number Museum / Herbarium

**Reporter:** Justin M. Wood  
**Address:** 201 North First Ave. No. 102  
Upland, CA 91786  
**E-mail Address:** Jwood@aspeng.com  
**Phone:** (909) 568-5235

**Plant Information**

Phenology: 75% vegetative 0% flowering 25% fruiting

**Animal Information**

# adults  # juveniles  # larvae  # egg masses  # unknown   
 breeding winterring burrow site rookery nesting other

**Location Description (please attach map AND/OR fill out your choice of coordinates, below)**

County: Riverside Landowner / Mgr.: Private  
 Quad Name: Victory Pass Elevation: 205 m  
 T 45 R 15E Sec 27, SE ¼ of \_\_\_\_\_ ¼, Meridian:  H  M  S  
 Source of Coordinates (GPS, topo. map & type): GPS  
 T \_\_\_\_\_ R \_\_\_\_\_ Sec \_\_\_\_\_, \_\_\_\_\_ ¼ of \_\_\_\_\_ ¼, Meridian:  H  M  S  
 GPS Make & Model Garmin 60CSx  
**DATUM:**  NAD27  NAD83  WGS84  
 Horizontal Accuracy ±15ft meters/feet  
**Coordinate System:** UTM Zone 10  UTM Zone 11  OR Geographic (Latitude & Longitude)   
**Coordinates:** 33°47'26.4"N 115°24'13.2"W

**Habitat Description** (plant communities, dominants, associates, substrates/soils, aspects/slope):  
Creosote scrub on packed sandy soils.

Other rare taxa seen at THIS site on THIS date:  
 (separate form preferred)

**Site Information** Overall site/occurrence quality/viability (site + population):  Excellent  Good  Fair  Poor  
 Immediate AND surrounding land use: Date farm, private residences  
 Visible disturbances:  
 Threats: In vicinity of proposed solar field  
 Comments:

**Determination:** (check one or more, and fill in blanks)

Keyed (cite reference): Hickman 1993  
 Compared with specimen housed at: \_\_\_\_\_  
 Compared with photo / drawing in: \_\_\_\_\_  
 By another person (name): \_\_\_\_\_  
 Other: \_\_\_\_\_

**Photographs:** (check one or more)

	Slide	Print	Digital
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes  no

# **Appendix C.6**

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Biological Resources Technical Report

# Biological Resources Technical Report

## Desert Harvest Solar Project

---

### Prepared for:



enXco - an EDF Energies Nouvelles Company  
4000 Executive Parkway, Suite 100  
San Ramon, CA 94583

### Prepared by:



Aspen Environmental Group  
201 North First Ave., No. 102  
Upland, CA 91786

And



AMEC Earth & Environmental, Inc.  
3120 Chicago Avenue, Suite 110  
Riverside, CA 92507

**January, 2012**



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## ACRONYMS AND ABBREVIATIONS

Area of Critical Environmental Concern	ACEC
AMEC Earth & Environmental, Inc.	AMEC
Aspen Environmental Group	Aspen
Bald and Golden Eagle Protection Act	BGEPA
Bureau of Land Management	BLM
Biological Resources Technical Report	BRTR
California Burrowing Owl Consortium	CBOC
California Department of Fish and Game	CDFG
California Environmental Quality Act	CEQA
California Endangered Species Act	CESA
California Rare Plant Rank	CRPR
California Native Plant Society	CNPS
California Natural Diversity Data Base	CNDDDB
Centimeter	cm
Desert Harvest Solar Project	DHSP
Desert Wildlife Management Area	DWMA
Environmental Impact Statement	EIS
Federal Endangered Species Act	ESA or federal ESA
Generator tie-line	gen-tie
Geographic Information System	GIS
Global Positioning System	GPS
Inch	in
Joshua Tree National Park	JTNP
Meter	m
Migratory Bird Treaty Act	MBTA
Mile	Mi
National Agriculture Imagery Program	NAIP
National Environmental Policy Act	NEPA
North American Datum of 1983	NAD83
Northern & Eastern Colorado Desert Coordinated Management Plan	NECO
Record of Decision	ROD
Right-of-way	ROW
United States Department of Agriculture	USDA
United States Fish and Wildlife Service	USFWS
United States Geological Survey	USGS
University of California	UC
Western Regional Climate Center	WRCC
Wildlife Habitat Management Area	WHMA
Zone of influence	ZOI

## PROJECT OVERVIEW

The Desert Harvest Solar Project (DHSP) site is located in the upper Chuckwalla Valley, on public lands administered by the Bureau of Land Management (BLM) in unincorporated Riverside County, approximately 6 miles north of Desert Center, California (Township 4 South, Range 15 East, Sections 25, 26, 27, USGS 7.5' Victory Pass and East of Victory Pass quadrangles). The Right-of-Way Application consists of two non-contiguous parcels (Figure 1). The large, northeastern parcel is 1,070 acres and the smaller, southwestern parcel is 270 acres. Portions of each parcel extend to the west of Kaiser Road (County Route R2); enXco does not propose to construct solar facilities within the Kaiser Road right of way, or west of Kaiser Road. With these areas excluded from the analysis, the total area addressed in this report is approximately 1,208 acres, consisting of 1051 acres in the larger parcel, and 157 acres in the smaller one.

The Project site is now undeveloped, natural open space. The surrounding area consists primarily of public lands managed by the BLM, with scattered smaller private land parcels to the south and east. The Desert Sunlight Solar Project, now under construction, is located to the immediate north of the Desert Harvest site (Figure 2). The Desert Sunlight project was recently approved (BLM 2011a; 2011b) and will occupy 3,761 acres when fully built out. Public lands to the west of Kaiser Road, adjacent to the Desert Harvest site, are within a BLM Desert Wildlife Management Area (DWMA), designated in the Northern & Eastern Colorado Desert Coordinated Management Plan (NECO; BLM and CDFG 2002). The Palen-Ford WHMA, also designated in the NECO, is generally east of the site, but approximately 46 acres of the WHMA are within the project site (see Figure 6). Some of the private lands to the south and west have been developed as residential and agricultural lands uses. These include active and inactive jojoba fields, rural residential lands, and the community of Lake Tamarisk.

Joshua Tree National Park (JTNP) surrounds the upper Chuckwalla Valley on the north, east, and west. To the north, the JTNP boundary is about 7 miles from the northern boundary of the Desert Harvest ROW, and about 4.5 miles north of the approved Desert Sunlight project boundary. The Coxcomb Mountains, in the southeastern corner of JTNP, are located about 1.8 miles northeast of the northeastern corner of the Desert Harvest ROW. To the west, the JTNP boundary is about 3.5 miles from the western boundary of the Desert Harvest site, at Kaiser Road.

In addition to the proposed solar generator, this report addresses four alternate generator tie-line (gen-tie) alignments which would deliver electrical power from the Desert Harvest project site to Southern California Edison's Red Bluff Substation, now under construction. The alternative alignments are shown on Figure 2.

- The Applicant's proposed generator tie-line would be on shared alignment and ROW with the approved Desert Sunlight gen-tie line, to be constructed on the same poles. This proposed alignment is described here and in the Project Environmental Impact Statement (EIS) as Alternative B. This alignment was described in the Desert Sunlight EIS (BLM 2011a) as Alternative A-1.
- Gen-tie alignment Alternative C would be parallel to the Desert Sunlight gen-tie, on separate poles, but within the same ROW. This alignment was also described in the Desert Sunlight EIS as Alternative A-1.
- Gen-tie alignment Alternative D, or the cross-valley alignment, was described in the Desert Sunlight EIS as Alternative A-2.
- Gen-tie alignment Alternative E was not reviewed in the Desert Sunlight EIS.

## SUMMARY OF FIELD SURVEYS

This Biological Resources Technical Report (BRTR) summarizes the results of field surveys provided in prior reports, as well as literature review and additional field work conducted by Aspen Environmental Group (Aspen) biologists. The reports and field surveys summarized in this BRTR are listed below.

- Streambed Delineation and Vegetation Map: Aspen biologists Justin Wood, Jared Varonin, and Dustin Ray mapped streambeds and vegetation on the proposed solar generator site during September and October 2011. The methods and results, including maps and text descriptions of vegetation and habitat, are incorporated into this BRTR. Vegetation mapping and delineations of the gen-tie alignment Alternatives B, C, and D are based on the Desert Sunlight EIS and supporting documents. Vegetation mapping of gen-tie alignment Alternative E was completed by Aspen biologists in October 2011, but delineation of gen-tie alignment Alternative E has not yet been completed.
- Special-Status Plant Surveys: Spring and fall field surveys for special-status plants were conducted during 2010 and 2011 by AMEC Earth and Environmental, Inc. (AMEC) and Aspen biologists. The descriptions of methods and results of botanical surveys in this BRTR are summarized from AMEC's botanical report (2011a), with additional information from Aspen's independent field work.
- Desert Tortoise Surveys: Focused surveys for desert tortoise were conducted over 100% of the larger, northeastern parcel during spring 2010 (AMEC 2011b) and the smaller, southwestern parcel in spring 2011 (AMEC 2011c), as well as within the adjacent buffer zone, in accordance with US Fish and Wildlife Service (USFWS) survey protocol (2010a).
- Mojave Fringe-toed Lizard Habitat Evaluation: Herpetologist Robert Black evaluated habitat throughout the solar generator site for Mojave fringe-toed lizard habitat suitability (Black 2011).
- Avian Point-Count Surveys: AMEC conducted avian point count surveys during winter and spring of 2011 to comply with BLM requirements (2009). Winter season point counts were conducted during January 2011, and breeding season point counts were between March 30 and April 28, 2011 (AMEC 2011d).
- Generator Tie-line Alignments: Field surveys have been completed on the alignments for Alternatives B, C, and D, as described in the Desert Sunlight EIS and supporting documents. Note that the 400-foot survey corridor described for that project covered the widths of both Alternatives B and C as addressed here. Field surveys of gen-tie alignment Alternative E were begun in 2011 (vegetation mapping and fall botanical surveys) and are ongoing.

In addition to these field surveys and reports, Aspen and AMEC biologists reviewed the California Natural Diversity Data Base (CNDDDB; California Department of Fish and Game, CDFG 2011) and California Native Plant Society (CNPS) Electronic Inventory (2011) to identify special-status plants, animals, and plant communities known from the area. The CNDDDB report is included here as Attachment 1. We also reviewed applicable documents pertaining to the Desert Sunlight project, including the vegetation and wildlife sections of the EIS (BLM 2011a), the BRTR (Ironwood Consulting 2010), and the Biological Opinion (USFWS 2011b). During all field surveys conducted for the Desert Harvest project, all plant and animal species observed in the field were identified and recorded in field notes. A cumulative list of all plant and animal species noted on the site is included here as Attachment 2.

# VEGETATION, HABITAT, AND JURISDICTIONAL STREAMBEDS

## Methods

Aspen biologists Justin Wood, Jared Varonin, and Dustin Ray mapped streambeds and vegetation on the proposed solar generator site during September and October 2011. Vegetation mapping and delineations of the gen-tie alignment Alternatives B, C, and D are based on the Desert Sunlight EIS and supporting documents. These three alignments conform to gen-tie line Alternatives A-1 and A-2, described and analyzed for the Desert Sunlight Solar Project (BLM 2011a). Aspen biologists reviewed these alignments in the field to review the prior mapping and descriptions, and to identify any substantial changes that may have taken place. Based on this field verification, the discussion of vegetation on gen-tie alignment Alternatives B and C is based on the Desert Sunlight Solar Project data. Vegetation mapping of gen-tie alignment Alternative E was completed by Aspen biologists in October 2011, but the jurisdictional delineation of gen-tie alignment Alternative E has not yet been completed.

**Table 1. Vegetation, Habitat, and Jurisdictional Streambed Field Survey Staff and Field Dates.**

<b>Date</b>	<b>Field Staff</b>
8 Sep 2011	Justin Wood, Dustin Ray
9 Sep 2011	Justin Wood, Dustin Ray
19 Sep 2011	Justin Wood, Jared Varonin
20 Sep 2011	Justin Wood, Jared Varonin
26 Sep 2011	Jared Varonin, Dustin Ray
27 Sep 2011	Jared Varonin, Dustin Ray
28 Sep 2011	Jared Varonin, Dustin Ray
4 Oct 2011	Justin Wood, Jared Varonin, Dustin Ray, Scott White
5 Oct 2011	Justin Wood, Jared Varonin

Prior to beginning field work, Ray mapped visible streambeds on USDA 2009 and 2010 NAIP Imagery (<http://datagateway.nrcs.usda.gov/GDGHome.aspx>), resolution of 1 square meter (i.e. the pixels are 1m x 1m) as Geographic Information System (GIS) shapefiles. Streambeds were delineated by field-verifying presence and widths of each channel, and then refining the mapped data. During the initial site visits (8 and 9 September 2011), Wood and Ray collected channel width and depth data at a series of “sample” streambeds within a portion of the site. Based on these field observations, Ray mapped all streambeds, and added channel widths to the data set. This method was repeated throughout the proposed solar generator site. The total jurisdictional streambed acreage was calculated as the summed area of jurisdictional channels (i.e., summed length x width of all channels) plus the acreage of adjacent riparian vegetation.

Vegetation was mapped with a minimum mapping unit of about 0.15 acres (6,500 square feet) by comparing vegetation on the proposed solar generator site to aerial imagery (above) during an initial site visit (8 and 9 September 2011) to identify dominant species and determine the extent that they could be distinguished on the image. Based on this field visit, Ray mapped vegetation as a separate GIS shapefile. The vegetation map and text descriptions (below) were field verified during follow-up field visits, while walking field transects and by visiting specific points, in conjunction with streambed delineation. All GIS information was digitized in the NAD 83 datum using the California State Plane Zone VI projection to ensure local accuracy when calculating area.

Any vegetation map is subject to imprecision for several reasons:

1. Vegetation types intergrade on the landscape so that there are no true boundaries in the vegetation itself. In these cases, a mapped boundary represents best professional judgment.
2. The published nomenclature and descriptions tend to intergrade; that is, a given stand of vegetation may not match any named type in the classification scheme used. Each polygon is labeled according to the most applicable type in the classification, but there is often some ambiguity among the types.
3. Vegetation tends to be patchy. Small patches of one type are often surrounded by another type. The size of these included patches varies, depending on the minimum mapping units and scale of available aerial imagery.
4. Photo interpretation of visually similar vegetation types may be difficult.

## Results

### Vegetation

Two vegetation types cover the proposed solar generator site and generator tie-line Alternatives B, C, and D (Figures 3 and 4): Creosote Bush Scrub (*Larrea tridentata* Shrubland Alliance) and Blue Palo Verde-Ironwood Woodland (*Parkinsonia florida-Olneya tesota* Woodland Alliance) (Sawyer et al. 2009). The Creosote Bush Scrub vegetation is a subset of the Sonoran Creosote Bush Scrub as described by Holland (1986), and Blue Palo-Verde-Ironwood Woodland is a subset of his description of Desert Dry Wash Woodland. There also are small areas within the proposed solar generator site where natural vegetation has been removed or disturbed for roads and other land uses. In most cases (e.g., narrow roads), these areas are too small for mapping at this scale; however, the proposed solar generator site overlaps a narrow area disturbed for date palm agriculture (on an adjacent parcel) in the southeastern corner of the site. This area is mapped as “Disturbed / Disused Agriculture” on Figures 3 and 4. There also are additional disturbed areas along the generator tie-line alignments, particularly alignment Alternative D, which crosses disused agricultural lands over part of its length.

Generator tie-line alignment Alternative E, located farther to the east, crosses two additional vegetation or habitat types: active sand dunes and Creosote Bush Scrub on partially stabilized sand fields (Figure 4).

**Creosote Bush Scrub (bajada/alluvial landforms):** Creosote Bush Scrub on the site is characterized by low shrub species diversity and relatively wide spacing of shrubs, usually with bare ground between. The dominant species in this vegetation is creosote bush (*Larrea tridentata*). Associated species include white bursage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and big galleta (*Pleuraphis rigida*). This vegetation also supports a diverse assemblage of seasonal annuals, including desert sunflower (*Geraea canescens*), desert dandelion (*Malacothrix glabrata*), several pincushion species (*Chaenactis* spp.) and several species of cryptantha (*Cryptantha* spp.). The areas mapped as Creosote Bush Scrub also include areas of desert pavement with relatively sparse cover of low-statured creosote bush and seasonal annuals such as devil’s spineflower (*Chorizanthe rigida*), kidneyleaf buckwheat (*Eriogonum reniforme*), and Emory’s rock daisy (*Perityle emoryi*). We mapped 1,026 acres of Creosote Bush Scrub on the proposed solar project site. Creosote Bush Scrub has no California Department of Fish and Game special-status designation (CDFG 2010a). Each of the generator tie-line alternatives would affect a limited additional acreage of Creosote Bush Scrub, depending on the specific locations of access roads, transmission line structures, and work sites.

Creosote Bush Scrub on the site matches the Desert Scrub wildlife habitat described by Laudenslayer and Boggs (1988). Within the project area, it provides habitat for wildlife species typical of the California deserts, including burrowing species such as kangaroo rats (*Dipodomys* spp.), pocket mice (*Perognathus* and *Chaetodipus* spp.), and desert cottontail (*Sylvilagus audubonii*); and mesopredators such as desert kit fox (*Vulpes macrotis arsipus*) and coyote (*Canis latrans*). This community also serves as habitat for numerous species of reptiles including desert iguana (*Dipsosaurus dorsalis*), sidewinder (*Crotalus cerastes*), desert horned lizard (*Phrynosoma platyrhinos*), Great Basin whiptail (*Aspidocelis tigris tigris*) and zebra-tailed lizard (*Callisaurus draconoides*). Common birds observed within this vegetation included black-throated sparrow (*Amphispiza bilineata*), Gambel's quail (*Callipepla gambelii*), common raven (*Corvus corax*), red-tailed hawk (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*).

**Blue Palo Verde-Ironwood Woodland:** Blue Palo Verde-Ironwood Woodland occurs throughout the project area primarily in dry washes and is characterized by the presence of desert ironwood (*Olneya tesota*) and blue palo verde (*Parkinsonia florida*). Additional tree species such as smoketree (*Psoralea spinosa*) and cat claw acacia (*Acacia greggii*) also occur but are uncommon. This vegetation is one of several communities included within broader vegetation types called desert wash woodland or microphyll woodland (Holland 1986; Schoenherr and Burk 2007). Vegetation in desert washes is generally taller, up to approximately 9m (30 ft) in height, and denser than in surrounding desert habitats, with the height of the wash vegetation proportional to the size of the arroyo (Laudenslayer 1988). Understory vegetation within these woodlands is composed of big galleta, cheesebush (*Hymenoclea salsola*), desert lavender (*Hyptis emoryi*) and other shrubs and subshrubs. Blue Palo Verde-Ironwood Woodlands on the site match the desert wash wildlife habitat described by Laudenslayer (1988). This habitat provides greater food, nesting, and cover resources than the surrounding Creosote Bush Scrub, and wildlife diversity is generally greater than in the surrounding desert. Examples of species that depend in part on desert microphyll woodlands include vermilion flycatcher (*Pyrocephalus rubinus*), black-tailed gnatcatcher (*Poliophtila melanura*), and burro deer (*Odocoileus hemionus eremicus*) (below). In addition, many of the species occupying the surrounding Creosote Bush Scrub are found in greater numbers in microphyll woodlands. This community is ranked by CDFG (2010a) as a special-status vegetation type, with state rarity ranking of S3. We mapped 180 acres of Blue Palo Verde –Ironwood Woodland on the proposed solar project site. Each of the generator tie-line alternatives would affect a limited additional acreage of this woodland vegetation, depending on the specific locations of access roads, transmission line structures, and work sites.

**Creosote Bush Scrub on Partially Stabilized Sand Fields:** Creosote Bush Scrub vegetation occurs on partially stabilized sand fields in the eastern portion of gen-tie Alternative E. This area is located at the western margin of a much larger dune system associated with Pinto Wash, at the base of the Coxcomb Mountains. This vegetation matches the description of Creosote Bush Scrub, above, but the cover is much sparser and the substrate consists of partially stabilized sand fields with accumulations of sands mounded at the bases of the shrubs. This habitat type is suitable for a series of special-status plants and animals, including Mojave fringe-toed lizard, which were reported in the area in the Desert Sunlight EIS and observed there by Aspen field staff. None of this habitat would be affected by solar generator construction, and only generator tie-line Alternative E would affect it. Acreage impacted by Alternative E would be dependent on the specific locations of access roads, transmission line structures, and work sites.

**Active Sand Dunes:** Active sand dunes are found in the eastern portion of the project area on gen-tie Alternative E. These dunes are at the western margin of the larger Pinto Wash / Coxcomb Mountains dune system, above. This habitat type is characterized by fine aeolian (i.e., wind-blown) sands that support very little vegetation. Vegetation on the dunes is sparse, but dominated by scattered creosote

bush and Russian thistle (*Salsola* sp.). None of this habitat would be affected by solar generator construction, and only generator tie-line Alternative E would affect it. Impacts acreage would be dependent on the specific locations of access roads, transmission line structures, and work sites.

## State Jurisdictional Streambed Delineation

The CDFG regulates alterations to state-jurisdictional streambeds under Section 1600 et seq. of the California Fish and Game Code. Jurisdictional acreage is interpreted as the bed and banks of channels and adjacent riparian vegetation. In the Chuckwalla Valley area, the Blue Palo Verde - Ironwood Woodland (described above; see Figure 3) is the regional riparian vegetation type. Due to the abundance and close spacing of braided channels throughout the area, all mapped Blue Palo Verde-Ironwood Woodland is adjacent to one or more channels. The CDFG jurisdictional streambeds are mapped on Figure 5. Note that roads crossing the site often intercept running water from channels, so that the roads themselves become streambeds as defined by CDFG. These roads account for the a few mapped streambeds that do not follow the general topography. Construction of the project would impact 113 acres of state-jurisdictional streambeds (34.5 acres within Blue Palo Verde–Ironwood Woodland, and 78.5 acres within Creosote Bush Scrub). Construction would also impact 180 acres of the adjacent riparian vegetation (Blue Palo Verde–Desert Ironwood Woodlands). Total impacts to jurisdictional areas are calculated as the sum of mapped woodlands (180 acres) plus the acreage of jurisdictional streambeds mapped outside those woodlands (78.5 acres), or 258.5 acres total within the proposed solar generator site. Each of the generator tie-line alternatives would affect a limited additional acreage of state-jurisdictional streambeds or woodland vegetation, depending on the specific locations of access roads, transmission line structures, and work sites.

## SPECIAL-STATUS SPECIES

### Methods

#### Special-Status Plants

Field surveys for special-status plants have been conducted during spring and fall throughout the proposed DHSP site, and during fall along gen-tie Alternative E. Botanical surveys on the other gen-tie alternative alignments were conducted for the Desert Sunlight EIS, and this BRTR adopts those survey results. Follow-up spring botanical surveys of gen-tie Alternative E will be completed during spring 2012.

Surveys were conducted throughout the larger, northwestern parcel by AMEC during spring 2010; throughout both parcels by Aspen biologists Justin Wood and Dustin Ray during fall 2010; throughout the smaller southwestern parcel by Wood and Ray during spring 2011; and along the eastern generator tie-line alignment (Alternative E) by Wood, Ray, and Aspen biologist Jared Varonin during fall 2011. In addition, incidental observations of flora, including special-status species, were recorded during all field work for the vegetation, habitat, and jurisdictional wetlands, described above. The following descriptions of methods and results of botanical surveys are summarized from AMEC’s botanical report (2011a), with additional information from Aspen’s field work.

**Table 2. Botanical Survey Aspen Field Survey Staff and Field Dates (AMEC field survey staff and dates reported in Appendix (AMEC 2011a; 2011b).**

Season/project component	Date	Field Staff
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<b>Season/project component</b>	<b>Date</b>	<b>Field Staff</b>
Spring surveys, DHSP site (larger parcel)	12 Apr 2010	AMEC staff: JB, BF, SF, MO, DS, AH, NM, SN
	13 Apr 2010	AMEC staff: JB, BF, SF, MO, DS, AH, NM, SN
	14 Apr 2010	AMEC staff: JB, BF, SF, MO, DS, AH, NM, SN
	15 Apr 2010	AMEC staff: JB, SF, MO, DS, AH, SN, MW
	16 Apr 2010	AMEC staff: JB, BF, SF, MO, DS, AH, SN, MW
	17 Apr 2010	AMEC staff: JB, BF, SF, MO, DS, AH
	7 May 2010	AMEC staff: NM, SN
	Fall surveys, DHSP site (both parcels)	21 Oct 2010
22 Oct 2010		Aspen staff: Justin Wood, Dustin Ray
1 Nov 2010		Aspen staff: Justin Wood, Dustin Ray
2 Nov 2010		Aspen staff: Justin Wood, Dustin Ray
Spring surveys, DHSP site (smaller parcel)	15 Apr 2011	Aspen staff: Justin Wood, Dustin Ray
	16 Apr 2011	Aspen staff: Justin Wood, Dustin Ray
Fall surveys, gen-tie Alternative E	5 Oct 2011	Justin Wood, Jared Varonin
	13 Oct 2011	Aspen staff: Justin Wood, Dustin Ray
	14 Oct 2011	Aspen staff: Justin Wood, Dustin Ray

The spring 2010 botanical surveys were conducted in a year of higher than average rainfall at the site. Average annual precipitation recorded at the Eagle Mountain weather station is 3.68 inches (9.35 cm), while the total rainfall for the 2009-2010 rainfall year (July 1 through June 30) was 5.37 in (13.6 cm). Thus, the results of the spring 2010 surveys should represent a large proportion of floristic diversity on the site. However, BLM and CDFG also recommend late-season botanical surveys on desert sites, particularly in the eastern California deserts. The distribution and abundance of many fall-flowering species in the California desert is incompletely documented in literature due to a historic emphasis on spring, rather than fall, field work. Yet a significant proportion of the flora is made up of annual species that germinate in response to summer rains, or perennial herbs that may flower at any time of year, depending on rainfall (Shreve and Wiggins 1964; Phillips and Comus 2000). Therefore, additional late-season field surveys were conducted to find and identify as many species as possible, to maximize the likelihood that species not known from the area, or not included on a list of “target species” would be documented if they occur on the site. This approach to field work conforms to CDFG (2009) and BLM (2009) guidelines recommending “floristic” botanical surveys and provides the most thorough practicable botanical inventory of the Right of Way Application.

Prior to field surveys, AMEC and Aspen biologists reviewed available literature to identify special-status biological resources known from the vicinity of the project site. The literature and databases listed below were reviewed. For data sources that are regularly updated, such as the CNDDDB and CNPS records, AMEC and Aspen biologists reviewed the available data several times during the course of the project. Only the most recent citations are included below.

- CNDDDB (CDFG 2011a) for the following 7½-minute USGS topographic quads: Victory Pass, East of Victory Pass, Desert Center, Corn Spring, Coxcomb Mountains, Pinto Wells, Placer Canyon, Buzzard Spring, Hayfield Spring, West of Palen Pass, Palen Lake, and Sidewinder Well;
- CNPS Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2011), for the same topographic quads;
- NECO Plan (BLM and CDFG 2002);
- List of California BLM Sensitive Plants (BLM 2010a);

- Recent environmental documents for nearby projects including the adjacent Desert Sunlight Solar Farm Project (BLM 2011b), the Palen Solar Power Project (BLM 2011c), and the Genesis Solar Energy Project (BLM 2011d).

Based upon review of the literature and database above, and AMEC’s consultation with Andrew C. Sanders (University of California Riverside Herbarium), a list of special-status plant species with potential to occur in the vicinity of the proposed project was compiled. Plant taxa were considered to be special-status species if they were classified as one or more of the following:

- Listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act (ESA);
- Listed as threatened or endangered, or candidates for listing under the California Endangered Species Act (CESA);
- Designated by BLM as Sensitive Plants: “all plant species that are currently on List 1B of the CNPS Inventory of Rare and Endangered Plants of California, are BLM sensitive species, along with others that have been designated by the California State Director” (BLM 2009; note that the CNPS Lists are now known as California Rare Plant Ranks, or CRPR);
- Listed as rare under the California Native Plant Protection Act;
- Meet the definition of rare or endangered under CEQA §15380(b) and (d).
- Considered special-status species in local or regional plans, policies, or regulations, such as the NECO Plan/EIS.

Table 3 presents the special-status plant species known from the region and summarizes their natural history, agency status, and probability of occurrence on the project site. See also Figure 3 in AMEC (2011a), which maps documented occurrences of special-status plant species that are known from the vicinity. No BLM Sensitive Species or CRPR 1B species are known from the project vicinity.

**Table 3. Special-Status Plants of the Chuckwalla Valley Area.**

<b>Special-Status Plant Species</b>	<b>Habitat and Distribution</b>	<b>Flower season</b>	<b>Conservation Status</b>	<b>Occurrence Probability</b>
<i>Abronia villosa</i> var. <i>aurita</i> Chaparral sand verbena	Annual or perennial herb; sand, about 250-5300 ft. elev.; San Jacinto Mtns, Inland Empire, adj. Colorado Des, Orange & San Diego cos; mostly alluvial fans and benches in western Riverside Co; dunes in deserts; not rare in the deserts	Feb. - July	Fed: none BLM: Sensitive Calif: S2 CRPR: 1B.1	High potential on gen-tie Alt E; low potential, washes or roadsides; otherwise not expected
<i>Ammoselinium giganteum</i> Desert sand-parsley	Annual; only known Calif. location at Hayfields Dry Lake, about 1300 ft. elev.; heavy soils, beneath shrubs; also to AZ and Mainl. Northern Mexico	March - April	Fed: none BLM: none Calif: SH CRPR: 2.3	Minimal; no suitable dry lakebed habitat
<i>Androstephium breviflorum</i> Pink funnel-lily, small-flowered androstephium	Bulb; Mojave Des shrublands; stabilized dunes or sandfields, about 700-5300 ft. elev.; scattered in Calif., N Ariz., S Nevada, to W Colorado	March-April	Fed: none BLM: none Calif: S2/S3 CRPR: 2.3	Minimal; no suitable habitat

Special-Status Plant Species	Habitat and Distribution	Flower season	Conservation Status	Occurrence Probability
<i>Astragalus insularis</i> var. <i>harwoodii</i> Harwood's milk vetch	Annual; sand, mainly dunes, also washes and slopes; below about 1200 ft. elev.; SE Calif. to Ariz., Baja and Sonora	Jan. - May	Fed: none BLM: NECO Calif: S2.2? CRPR: 2.2	High potential on gen-tie Alt E; low potential, washes or roadsides; otherwise not expected
<i>Astragalus lentiginosus</i> var. <i>coachellae</i> Coachella Valley milk-vetch	Annual or perennial herb; open sand, gen. dunes but also wash margins; below about 2200 ft. elev.; endemic to Coachella Valley; formerly reported from Chuckwalla Valley, those populations now recognized as <i>A. l.</i> var. <i>variabilis</i> (speckled milk-vetch)	Feb. - May	Fed: <b>END</b> BLM: Sensitive, NECO Calif: S2.1 CRPR: 1B.2	Minimal; outside geographic range
<i>Ayenia compacta</i> Ayenia	Perennial herb; desert shrubland, gen. rocky sites, washes and mountain slopes below about 3600 ft. elev.; W low desert margins, Chuckwalla Valley, and E Mojave; also Baja Calif. and Sonora (Mexico)	March - April	Fed: none BLM: none Calif: S3? CRPR: 2.3	Low-moderate. Washes are marginally suitable; not seen during field surveys.
<i>Cassia</i> – see <i>Senna</i>				
<i>Castela emoryi</i> Crucifixion thorn	Shrub; widespread but rare, Calif. deserts to Ariz., Baja and Sonora; fine sand or silt, washes, plains, non-saline bottomlands, about 350-2100 ft. elev.	June-July	Fed: none BLM: NECO Calif: S2/S3 CRPR: 2.3	Occurs; see text
<i>Chamaesyce abramsiana</i> ( <i>Euphorbia abramsiana</i> ) Abrams' spurge	Annual; sandy flats; about sea level to 3,000 ft. elev.; East Mojave desert, JTNP, and low desert, to Arizona and Mexico		Fed: none BLM: none Calif: S1.2 CRPR: 2.2	Potential on gen-tie Alt E; low potential, washes or roadsides; otherwise not expected
<i>Colubrina californica</i> Las Animas colubrina	Shrub; scattered mtn ranges of the low desert, incl. JTNP, Eagle Mtns, Chuckwalla Mtns, etc.; about 1100-3900 ft. elev.; rare in Calif., more common in Ariz. and Mexico	April - May	Fed: none BLM: NECO Calif: S2/S3.3 CRPR: 2.3	Low; field survey results
<i>Coryphantha alversonii</i> ( <i>C. vivipara</i> var. <i>alversonii</i> ; <i>Escobaria vivipara</i> var. <i>alversonii</i> ) Alverson's foxtail cactus	Cactus; desert scrub, S Mojave and Sonoran Deserts, about 250-5000 ft. elev.; Riverside, San Bernardino, and Imperial cos., to Arizona	May - June	Fed: none BLM: NECO Calif: S3.2 CRPR: 4.3	Low; field survey results; bajada site may be unsuitable habitat
<i>Cynanchum utahense</i> ( <i>Funastrum utahense</i> ) Utah vine milkweed	Climbing perennial herb; sandy or gravelly soils, E and S Mojave Des through JTNP and Anza-Borrego regions, to S Nevada, NW Ariz., and SW Utah; about 500 - 4700 ft. elev.	April-June	Fed: none BLM: none Calif: S3.2 CRPR: List 4.2	Occurs - reported spring 2010 (one indiv.) not relocated in 2011
<i>Ditaxis claryana</i> ( <i>D. adenophora</i> ) Glandular ditaxis	Perennial herb. Conflicting info. in literature. Sandy soils below about 350 ft. elev.; or rocky uplands & sandy washes to 3000 ft.; widely scattered, Sonoran Desert, Calif. to Ariz. and mainland Mexico	conflicting lit. reports	Fed: none BLM: NECO Calif: S1/S2 CRPR: 2.2	Low - moderate; habitat may be suitable, but not seen during field surveys

Special-Status Plant Species	Habitat and Distribution	Flower season	Conservation Status	Occurrence Probability
<i>Ditaxis californica</i> ( <i>D. serrata</i> var. <i>californica</i> ) California ditaxis	Perennial herb; washes and canyons, low desert and adj. mtns.; La Quinta E to Desert Center, also Anza Borrego; about 100-3250 ft. elev.	March - Dec	Fed: none BLM: NECO Calif: S2 CRPR: List 3.2	Low - moderate; habitat is suitable, but not seen during field surveys
<i>Eriastrum harwoodii</i> Harwood's woollystar	Annual; partially stabilized desert dunes (San Bernardino, Riverside, and San Diego cos.); about 900 ft. to about 1700 ft. elev.	Mar-June	Fed: USFWS none BLM: Sensitive Calif: S2 CRPR: 1B.2	High potential on gen-tie Alt E; low potential, washes or roadsides; otherwise not expected
<i>Escobaria</i> – see <i>Coryphantha</i>				
<i>Euphorbia</i> – see <i>Chamaesyce</i>				
<i>Grusonia parishii</i> ( <i>Opuntia parishii</i> ) Parish's club-cholla	Stem-succulent; rocky desert shrublands, East Mojave Desert, JTNP, foothills above Coachella and Chuckwalla valleys; about 1000 – 5000 ft. elev.	May - July	Fed: none BLM: none Calif: S2 CRPR: 2.2	Low; field survey results; bajada site may be unsuitable habitat
<i>Koeberlinia spinosa</i> var. <i>tenuispina</i> Slender-spined allthorn	Deciduous shrub; desert shrublands and washes, below about 1700 ft. elev.; central Sonoran Desert, Imperial and Riverside cos; reported on-site in CNDDDB, apparently based on misidentified <i>Castela emoryi</i>	May – July	Fed: none BLM: NECO Calif: S2.2 CRPR: 2.2	Low potential, not seen during field surveys ; see text
<i>Matelea parvifolia</i> Spearleaf	Low twining vine; rocky sites in desert shrublands, central and eastern deserts and Anza-Borrego State Park; S Nev., Texas, and Baja; about 1400-3600 ft. elev.	March - May	Fed: none BLM: NECO Calif: S2.2 CRPR: 2.3	Low potential, not seen during field surveys
<i>Opuntia</i> – also see <i>Grusonia</i>				
<i>Opuntia wigginsii</i> Wiggins cholla	Cactus; doubtful taxon; probably a hybrid ( <i>O. ramississima</i> x <i>echinocarpa</i> ), desert shrubland about 100-3000 ft. elev., scattered Colorado Des. sites, east to Arizona	March	Fed: none BLM: NECO Calif: S1? CRPR: 3.3	Low potential, not seen during field surveys
<i>Proboscidea althaefolia</i> Desert unicorn-plant	Perennial herb; generally sandy soils, desert shrubland, about 500-3300 ft. elev.; Sonoran Desert to Arizona and Mexico	May - Aug	Fed: none BLM: NECO Calif: S3.3 CRPR: 4.3	Occurs
<i>Salvia greatae</i> Orocopia sage	Shrub; desert shrubland, washes and alluvial fans, about 100-2800 ft. elev.; Riverside & Imperial cos, endemic to Orocopia Mtns and Chocolate Mtns (doubtful report near Cadiz, San Bernardino Co)	March - April	Fed: none BLM: Sensitive, NECO Calif: S2 CRPR: 1B.3	Low - moderate; habitat may be suitable, but not seen during field surveys
<i>Selaginella eremophila</i> Desert spike-moss	Perennial herb; mountainous or hillside rock outcrops and crevices, about 600 - 3000 ft. elev.; lower desert-facing slopes of San Jacinto Mtns and adj. desert, to Texas and Baja	n/a	Fed: none BLM: none Calif: S 2.2? CRPR: 2.2	Minimal (no suitable habitat)

Special-Status Plant Species	Habitat and Distribution	Flower season	Conservation Status	Occurrence Probability
<i>Senna covesii</i> ( <i>Cassia covesii</i> ) Coves's cassia	Low, mostly herbaceous perennial; desert washes below about 2000 ft. elev.; Colorado Des to Nevada, Arizona and Baja Calif. [ranked S1 in CDFG 2011, corrected as S2 by pers. communic. with R. Bittman, CDFG, 21 Sep 2011]	April - June	Fed: none BLM: NECO Calif: S2 CRPR: 2.2	Low - moderate; habitat may be suitable, but not seen during field surveys
<i>Stylocline sonorensis</i> Mesquite neststraw	Annual; known from only one record, near Hayfields Dry Lake, now presumed extirpated; occurs in SE Arizona and mainl. Mexico	April	Fed: none BLM: NECO Calif: SX CRPR: 1A	Minimal due to apparent extirpation
<i>Teucrium cubense</i> ssp. <i>depressum</i> Dwarf germander	Annual or perennial herb; sandy alluvium, washes, etc., below about 1300 ft. elev., scattered Sonoran Desert locations, to Texas and Baja Calif.	March - May	Fed: none BLM: none Calif: S2 CRPR: 2.2	Low - moderate; habitat may be suitable, but not seen during field surveys
<i>Wislizenia refracta</i> ssp. <i>palmeri</i> Jackass-clover	Perennial herb or subshrub; sand flats, washes, roadsides, saltbush scrub; scattered Calif. desert locations eastward to New Mexico, sea level to about 1000 ft. elev.	April - Nov.	Fed: none BLM: NECO Calif: S 2? CRPR: 2.2	High potential on gen-tie Alt E; low potential, washes or roadsides; otherwise not expected

General references (botany): Baldwin et al. 2002; Calif. Dept. of Fish & Game 2011, Calif. Native Plant Society 2011; Consortium of California Herbaria 2011; Felger 2000; Munz 1974; Shreve and Wiggins 1964; Turner et al. 1995; USFWS 2010b.

#### Conservation Status

**Federal designations:** (federal ESA, USFWS).

END: Federally listed, endangered.

THR: Federally listed, threatened.

Candidate: Sufficient data are available to support federal listing, but not yet listed.

Proposed: Formally proposed for federal status shown.

#### Bureau of Land Management Designations:

Sensitive: Species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. BLM Sensitive species also include all federal Candidate species and federal Delisted species which were so designated within the last 5 years, and CRPR 1B plant species that occur on BLM lands.

NECO: Special-status species addressed in the NECO Plan/EIS due to management concerns within the NECO Planning Area.

#### State designations: (CESA, CDFG)

END: State listed, endangered.

THR: State listed, threatened.

RARE: State listed as rare (applied only to certain plants).

SSC: California species of special concern. Considered vulnerable to extinction due to declining numbers, limited geographic ranges, or ongoing threats.

FP: Fully protected. May not be taken or possessed without permit from CDFG.

**CDFG Natural Diversity Data Base Designations:** Applied to special-status plants and sensitive plant communities; where correct category is uncertain, CDFG uses two categories or question marks.

S1: Fewer than 6 occurrences or fewer than 1000 individuals or less than 2000 acres.

S1.1: Very threatened

S1.2: Threatened

S1.3: No current threats known

S2: 6-20 occurrences or 1000-3000 individuals or 2000-10,000 acres (decimal suffixes same as above).

S3: 21-100 occurrences or 3000-10,000 individuals or 10,000-50,000 acres (decimal suffixes same as above).

- S4: Apparently secure in California; this rank is clearly lower than S3 but factors exist to cause some concern, i.e., there is some threat or somewhat narrow habitat. No threat rank.
- S5: Demonstrably secure or ineradicable in California. No threat rank.
- SH: All California occurrences historical (i.e., no records in > 20 years).
- SX: Presumed extirpated in California.

**California Native Plant Society (CNPS) Rare Plant Rank designations.** Note: According to CNPS (<http://www.cnps.org/cnps/rareplants/ranking.php>), plants ranked as CRPR 1A, 1B, and 2 meet definitions as threatened or endangered and are eligible for state listing. That interpretation of the state Endangered Species Act is not in general use.

- 1A: Plants presumed extinct in California.
- 1B: Plants rare and endangered in California and throughout their range.
- 2: Plants rare, threatened or endangered in California but more common elsewhere in their range.
- 3: Plants about which we need more information; a review list.
- 4: Plants of limited distribution; a watch list.

**California Rare Plant Rank Threat designations:**

- .1 Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- .2 Fairly endangered in California (20-80% occurrences threatened)
- .3 Not very endangered in California (<20% of occurrences threatened or no current threats known)

**Definitions of occurrence probability:** Estimated occurrence probabilities based literature sources cited earlier and field surveys and habitat analyses reported here.

*Occurs:* Observed on the site by qualified biologists.

*Expected:* Not observed or recorded on the site, but very likely present during at least a portion of the year.

*High:* Habitat is a type often utilized by the species and the site is within the known range of the species.

*Moderate:* Site is within the known range of the species and habitat on the site is a type occasionally used.

*Low:* Site is within the species' known range but habitat is rarely used, or the species was not found during focused surveys covering less than 100% of potential habitat or completed in marginal seasons.

*Minimal:* No suitable habitat on the site; or well outside the species' known elevational or geographic ranges; or a focused study covering 100% of all suitable habitat, completed during the appropriate season and during a year of appropriate rainfall, did not detect the species.

*Unknown:* No focused surveys have been performed in the region, and the species' distribution and habitat are poorly known.

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AMEC biologists visited reference populations of two special-status species, Coachella Valley milk-vetch and Harwood's milk-vetch, to confirm that they could be reliably located and identified during the 2010 field surveys. Coachella Valley milk-vetch is the only listed threatened or endangered plant reported from the vicinity and Harwood's milk-vetch is a relatively widespread CRPR 2.2 species with potential to occur in the project area. In 2011, Aspen biologists visited reference populations of three additional special-status plants, California ditaxis, Utah vine milkweed, and desert all-thorn, to compare known examples with similar plants on the ROW.

During all botanical surveys, all plant species observed were identified in the field or collected for later identification. Plants were identified using keys, descriptions, and illustrations in regional references such as Shreve and Wiggins (1964), Munz (1974), and Baldwin et al. (eds., 2002). All species noted in each survey area are listed in the attached species list. In conformance with CDFG guidelines (2009), surveys were (a) conducted during flowering seasons for the special-status plants known from the area, (b) floristic in nature, (c) consistent with conservation ethics, (d) systematically covered all habitat types on the Right of Way, and (e) well documented, by this report and by voucher specimens to be deposited at Rancho Santa Ana Botanic Garden. Locations of special-status plants will be reported to the NDDB.

Spring 2010 surveys for special-status plants were conducted concurrently with desert tortoise surveys, along belt transects spaced at 10 meter intervals over 100 percent of the larger ROW parcel. AMEC botanist Shari Norton accompanied tortoise biologists, and documented all plant species observed throughout the survey period (AMEC 2011a). This field method combines the BLM's (2009) two

recommended field protocols (100 percent coverage and “intuitive controlled”). Tortoise biologists were supplied with a project-specific field guide containing illustrations of special-status plants potentially occurring on the site. The tortoise crew, accompanied by the botanist, covered the entire survey area and, during the surveys, directed the botanist to plants they did not recognize, or that resembled special-status plants of the area. Where special-status species were observed, the locations were recorded with hand-held global positioning system (GPS) devices.

Fall 2010 botanical surveys covered the entire DHSP site, but did not include the gen-tie alignments. The field methods followed the “intuitive controlled survey” methods, described by BLM (2009). Wood and Ray carried out a complete survey of washes and any low-lying areas throughout the two parcels where runoff from summer rains would have been most concentrated, and a less intense survey of upland bajada and desert pavement surfaces. The primary target species for these field surveys were glandular ditaxis and California ditaxis, based on recommendations in AMEC (2011a). On average, August is the wettest month, though Western Regional Climate Center (WRCC) reported no measureable rainfall at the Eagle Mountain station in August 2010. Results of the fall 2010 survey were augmented with additional incidental botanical observations made during fall 2011, during the vegetation mapping and streambed delineation field work, described above. Rainfall during late summer 2011 was much heavier, and numerous occurrences of one late-flowering species, desert unicorn-plant, were recorded.

Spring 2011 botanical surveys covered the smaller, southwestern DHSP site, following the 100 percent coverage survey method described by BLM (2009). Wood and Ray walked linear transects, spaced 10 meters apart, over the entire parcel. This survey method effectively covered 100 percent of the parcel. The WRCC has not updated precipitation records at the Eagle Mountain Station for 2011, but spring of 2011 was a drier rainfall year than 2010, and diversity of the spring flora was lower than recorded in spring 2010.

Fall 2011 botanical surveys of gen-tie alignment Alternative E by Aspen biologists Justin Wood, Dustin Ray, and Jared Varonin. They covered the entire alignment, by walking four intuitive-controlled transects (BLM 2009) along each segment of the alignment. On each segment, two biologists walked from a starting point, to an ending point, and then back. The WRCC has not updated precipitation records at the Eagle Mountain Station for 2011, but heavy rains occurred in late summer of 2011, and diversity of the summer-fall flora was greater than recorded in fall 2010.

Botanical surveys of gen-tie alignment Alternatives B, C, and D were completed during spring 2010 by Ironwood Consulting staff, as described in the Desert Sunlight EIS (BLM 2011a) and supporting documents.

## **Special-Status Wildlife**

Based upon the literature and database review described above, a list of special-status wildlife species with potential to occur in the vicinity of the proposed project was compiled. In addition to the literature sources listed above for botanical surveys, the literature review included the CNDDDB’s Special Animals List (CDFG 2011b). Wildlife species were considered to be special-status species if they were classified as one or more of the following:

- Listed, proposed for listing, or candidates for listing as threatened or endangered under the federal ESA;
- Listed as threatened or endangered. or candidates for listing under CESA;
- Designated by BLM as Sensitive Animals (BLM 2010b);

- Meet the definition of rare or endangered under CEQA §15380(b) and (d).
- Considered special-status species in local or regional plans, policies, or regulations, such as the NECO Plan/EIS.

All special-status wildlife species identified by this literature review, and others known from the general region, are included in Table 4, which summarizes the natural history, agency status, and occurrence probability on the site for each special status wildlife species known from the region.

**Table 4. Special-Status Wildlife of the Chuckwalla Valley Area.**

<b>Special-Status Wildlife Species</b>	<b>Habitat and Distribution</b>	<b>Activity season</b>	<b>Conservation Status</b>	<b>Occurrence Probability</b>
<b>AMPHIBIANS</b>				
<i>Scaphiopus couchi</i> Couch's spadefoot	Breeds in seasonal rainpools following summer rains; burrows in sand remainder of year; eastern Colorado Desert, generally close to Colorado River	Summer	Fed: none BLM: Sensitive, NECO Calif: SSC	Minimal; no potential rainpool habitat; outside known geographic range
<b>REPTILES</b>				
<i>Gopherus agassizii</i> ( <i>Xerobates agassizi</i> ) Desert tortoise	Desert shrublands where soil suitable for burrows; Mojave and Sonoran des. (E Calif., S Nevada, W Ariz., and Sonora, Mexico)	Spring - summer	Fed: <b>THR</b> BLM: Sensitive, NECO Calif: <b>THR S2</b>	High; no recent sign, but near known occurrences (see text)
<i>Heloderma suspectum cinctum</i> Banded Gila monster	Rocky outcrops in desert shrubland; scarce in scattered eastern mountain ranges of Calif. deserts; to S Nevada, W Ariz., and Mainland Mexico	warm seasons	Fed: none BLM: Sensitive Calif: SSC S1	Minimal; outside known range and bajada habitat is poorly suitable
<i>Sauromalus obesus</i> ( <i>S. ater</i> ) Common chuckwalla	Rocky outcrops in desert shrubland; throughout deserts of Calif., S Nevada, W Ariz., and Baja Calif.	warm seasons	Fed: none BLM: NECO Calif: S4	Low; no suitable bedrock outcrops
<i>Uma scoparia</i> Mojave fringe toed lizard	Sand, especially dunes, sandy hummocks, washes, stabilized sand flats; below sea level to about 3000 ft. elev.; Death Valley, SW to Antelope Valley and SE to W Arizona	Warm season	Fed: none BLM: Sensitive, NECO Calif: SSC S3S4	Occurs on gen-tie Alt E; low potential remainder of project components; poorly suitable habitat (see text)
<i>Charina trivirgata</i> ( <i>Lichanura trivirgata</i> ) Rosy boa	Rocky chaparral and desert shrubland; gen below about 4500 ft. elev.; S Calif. through Baja Calif., SW Arizona, and western Sonora	Spring - summer	Fed: none BLM: NECO Calif: S3S4	Low-moderate (marginally suitable habitat throughout)
<b>BIRDS</b>				
<i>Circus cyaneus</i> Northern harrier	Breeds colonially in grasslands and wetlands; forages over open terrain; N America and Eurasia	Winter; rare in summer	Fed: none BLM: none Calif: SSC S3 (nesting)	Nesting: Minimal (no habitat) Foraging: Expected rarely, mainly winter

<b>Special-Status Wildlife Species</b>	<b>Habitat and Distribution</b>	<b>Activity season</b>	<b>Conservation Status</b>	<b>Occurrence Probability</b>
<i>Aquila chrysaetos</i> Golden eagle	Nests in remote trees and cliffs; forages over shrublands and grasslands; breeds throughout W N America, winters to E coast	Year-around	Fed: Eagle Protection act (see text) BLM: NECO Calif: SSC S3 fully protected	Nesting: Minimal on-site, occurs in surrounding mtns Foraging: High (year-around)
<i>Pandion haliaetus</i> Osprey	Nests in northern N America and Mexican coastlines near large water bodies, preys primarily on fish; winters in central Calif to S America;	Spring and fall migr. seasons	Fed: none BLM: none Calif: S3, watch list (nesting)	Nesting: Minimal (outside range; no suitable sites) Migration: Occurs, occasional flyover
<i>Buteo swainsonii</i> Swainson's hawk	Breeds in trees in open habitats (e.g., grassland), Central Valley and W Mojave Des (Calif.) and east to cent. US, S. Canada, N. Mexico; winters in S America.	Spring and fall migr. seasons	Fed: none BLM: none Calif: S2, <b>THR</b>	Nesting: Minimal (outside range; no suitable sites) Migration: Present, occasional flyover
<i>Buteo regalis</i> Ferruginous hawk	Forages over grassland and shrubland; winters in W and SW N Amer. (breeds in Great Basin and N plains)	Winter	Fed: none BLM: NECO Calif: SSC S3S4 (wintering)	Nesting: Minimal (outside range) Winter: Expected (rarely)
<i>Accipiter striatus</i> Sharp-shinned hawk	Nests and hunts in forest & woodland mainly to N (may breed in S Calif. Mtn woodlands); also forages in open areas; regularly winters in S Calif.	Winter	Fed: none BLM: none Calif: SSC S3 (nesting)	Nesting: Minimal (no habitat, outside range) Winter/Migration: Occurs (Jan 2011)
<i>Accipiter cooperii</i> Cooper's hawk	Nests and hunts in forest & woodland, also forages in open areas; most of US, Central and S America	Year-around	Fed: none BLM: none Calif: SSC S3 (nesting)	Nesting: Minimal (no habitat) Winter/Migration: Expected
<i>Falco columbaris</i> Merlin	Uncommon in winter in S Calif. desert and valleys (breeds in northern N America and Eurasia)	Winter	Fed: none BLM: none Calif: SSC S3 (wintering)	Nesting: Minimal (outside range) Winter: Expected
<i>Falco mexicanus</i> Prairie falcon	Nests on high cliffs, forages primarily over open lands; occurs throughout arid western US and Mexico	Year-around	Fed: none BLM: NECO Calif: SSC S3 (nesting)	Nesting: Minimal on-site, occurs in surrounding mtns Foraging: High (year-around)
<i>Athene cunicularia</i> ( <i>Speotyto cunicularia</i> ) Burrowing owl	Nests mainly in rodent burrows, usually in open grassland or shrubland; forages in open habitat; increasingly uncommon in S Calif.; occurs through W US and Mexico	Year-around	Fed: none BLM: Sensitive, NECO Calif: SSC S2 (burrow sites)	Occurs (Sep 2011); see text
<i>Asio flammeus</i> Short-eared owl	Breeds in marshes and densely vegetated wetlands, forages over open wetlands, ag fields, and grasslands; temperate N & S America, Eurasia	Year-around	Fed: none BLM: none Calif: S3, SSC (nesting)	Breeding: Minimal (no habitat) Winter: Minimal (but reported near Lake Tamarisk)

<b>Special-Status Wildlife Species</b>	<b>Habitat and Distribution</b>	<b>Activity season</b>	<b>Conservation Status</b>	<b>Occurrence Probability</b>
<i>Asio otus</i> Long-eared owl	Breed in riparian woodlands; forage (nocturnally) over open land; sea level to about 6000 ft. elev.; through N America and Eurasia	Year-around	Fed: none BLM: none Calif: S3 SSC (nesting)	Breeding: Minimal (no habitat) Winter: Minimal (but occurs rarely at Lake Tamarisk)
<i>Chaetura vauxi</i> Vaux's swift	Breeds central Calif. and northward, in coastal and montane forests; winters in Central and S America	Spring and fall migr. seasons	Fed: none BLM: none Calif: SSC S3 (nesting)	Nesting: Minimal (outside range) Migration: Occurs, occasional flyover
<i>Melanerpes uropygialis</i> Gila woodpecker	Saguaro woodlands, sometimes other woodlands; cavity nester mainly in cactus; SE Calif., S Ariz, W Mexico (incl. Baja)	Year-around	Fed: none BLM: Sensitive Calif: <b>END</b> S1S2	Nesting: Minimal (ironwood poor for nest constr.) Winter: Occurs (Dec 2010); see text
<i>Lanius ludovicianus</i> Loggerhead shrike	Woodlands, shrublands, open areas with scattered perch sites; not dense forest; widespread in N America; valley floors to about 7000 ft. elev.	Year-around	Fed: none BLM: none Calif: SSC S4 (nesting)	Occurs (suitable habitat throughout)
<i>Aphelocoma californica cana</i> Scrub jay (Eagle Mtn population)	Locally endemic year-around resident in pinyon woodlands in the Eagle Mountains; long-disjunct from other populations	Year-around	Fed: none BLM: none Calif: CDFG watch list, S1S2	Occurs? (observed as transient, Oct 2011; see text)
<i>Toxostoma bendirei</i> Bendire's thrasher	Joshua tree woodland, desert scrub; high cactus cover; mainly E Mojave Des in Calif. (scarce in W Mojave); American SW and mainl. Mexico; winters in S Arizona, New Mexico, and mainl. Mexico	Spring-summer	Fed: none BLM: Sensitive, NECO Calif: SSC S3	Low-Moderate; marginal habitat throughout
<i>Toxostoma crissale</i> Crissal thrasher	Nests in dense, low, brushy thickets of mesquite or other desert riparian shrubs; Sonoran Des, E Mojave Des, to Texas, W mainland Mexico	Year-around	Fed: none BLM: NECO Calif: SSC S3	Low-moderate; habitat marginally suitable
<i>Toxostoma lecontei</i> LeConte's thrasher	Calif. deserts, SW Central Val. & Owens Val., east to Utah, Arizona; open shrubland, often sandy or alkaline flats	Year-around	Fed: none BLM: NECO Calif: S3 (SSC in San Joaquin Val)	High; suitable habitat throughout
<i>Pyrocephalus rubinus</i> Vermillion flycatcher	Desert riparian woodlands and shrublands; SE Calif., east through S Texas, and S through Mexico; winters in Mexico	spring-summer	Fed: none Calif: SSC S2S3 (nesting)	Nesting: Moderate (suitable nesting habitat in ironwood stands)
<i>Vermivora luciae</i> Lucy's warbler	Cavity-nesting species; breeds in desert riparian woodlands through much of Arizona; winters on Pacific Coast of mainl. Mexico	spring-summer	Fed: none BLM: Sensitive Calif: SSC S2S3 (nesting)	Nesting: Moderate (margin of known range; see text) Migration: Occurs singing males observed April 2011

## MAMMALS

<b>Special-Status Wildlife Species</b>	<b>Habitat and Distribution</b>	<b>Activity season</b>	<b>Conservation Status</b>	<b>Occurrence Probability</b>
<i>Antrozous pallidus</i> Pallid bat	Rock outcrops of shrublands, mostly below about 6000 ft. elev.; Calif, SW N Amer through interior Oregon and Washington; hibernates in winter	Warm season	Fed: none BLM: Sensitive Calif: SSC S3	Low potential for roosting on site; high potential for foraging in area
<i>Corynorhinus (Plecotus) townsendii</i> Townsend's big-eared bat (incl. "pale," "western," and other subspecies)	Many habitats throughout Calif and W N Amer, scattered populations in E; day roosts in caves, tunnels, mines; feed primarily on moths	Year-around	Fed: none BLM: Sensitive Calif: SSC, S2S3	Low potential for roosting on site; high potential for foraging in area
<i>Euderma maculatum</i> Spotted bat	Desert (cool seasons) to pine forest (summer), much of SW N Amer. but very rare; roosts in deep crevices in cliffs, feeds on moths captured over open water	Not known	Fed: none BLM: Sensitive Calif: SSC S2S3	Low potential for roosting or foraging on site
<i>Eumops perotis californicus</i> California mastiff bat	Lowlands (with rare exceptions); cent. and S Calif., S Ariz., NM, SW Tex., N Mexico; roost in deep rock crevices, forage over wide area	Year-around	Fed: none BLM: Sensitive, NECO Calif: SSC S3?	Low potential for roosting on site; high potential for foraging in area
<i>Lasiurus xanthinus (Nycteris ega xanthina)</i> Western (Southern) yellow bat	Mexico and Cent. Amer., to S AZ; Riv., Imperial and San Diego Cos.; riparian and wash habitats; roosts in trees; evidently migrates from Calif. during winter	Spring-summer?	Fed: none BLM: none Calif: S3	Low potential for roosting on site; high potential for foraging in area
<i>Macrotus californicus (M. waterhousii)</i> California leaf-nosed bat	Arid lowlands, S Calif., S and W Ariz., Baja Calif. and Sonora, Mexico; roost in mine-shafts, forage over open shrublands	Year-around	Fed: none BLM: Sensitive, NECO Calif: SSC S2S3	Low potential for roosting on site; high potential for foraging in area
<i>Nyctinomops macrotis (Tadarida molossa)</i> Big free-tailed bat	Roosts in crevices of rocky cliffs, scattered localities in W N. Amer. through Cent. Amer.; ranges widely from roost sites; often forages over water	Year-around (?)	Fed: none BLM: none Calif: SSC S2	Low potential for roosting on site; high potential for foraging in area
<i>Nyctinomops femorosaccus (Tadarida femorosaccus)</i> Pocketed free-tailed bat	Deserts and arid lowlands, SW US, Baja Calif., mainland Mexico; Roost mainly in crevices of high cliffs; forage over water and open shrubland	Year-around	Fed: none BLM: NECO Calif: SSC S2S3	Low potential for roosting on site; high potential for foraging in area
<i>Xerospermophilus tereticaudus chlorus (Spermophilus t. c.)</i> Palm Springs round-tailed ground squirrel (or Coachella Valley round-tailed ground squirrel)	Widespread in California deserts, Coachella Valley to Death Valley; formerly considered endemic to mesquite and sandy habitats in Coachella Valley	Year-around	Fed: none (former candidate) BLM: Sensitive Calif: SSC S2S3	Occurs (reported on site and near genetic Alignment B)
<i>Neotoma albigula venusta</i> Colorado Valley woodrat	Desert shrublands; SE Calif., SW Ariz., adj. Mexico, and southernmost Nevada; closely associated with beavertail or mesquite thickets	Year-around	Fed: none BLM: NECO Calif: S1S2	Low (habitat marginal)
<i>Taxidea taxus</i> American badger	Mountains, deserts, interior valleys where burrowing animals are avail as prey and soil permits digging; throughout cent and W N Amer	Year-around	Fed: none BLM: none Calif: CSC S4	Present; disused burrow on-site; expected in low numbers throughout area

<b>Special-Status Wildlife Species</b>	<b>Habitat and Distribution</b>	<b>Activity season</b>	<b>Conservation Status</b>	<b>Occurrence Probability</b>
<i>Vulpes macrotia arsipus</i> Desert kit fox	Widespread, open desert lands; constructs below-ground dens; requires soil suitable for burrowing; primarily nocturnal; preys on small mammals	Year-around	Federal: none BLM: none State: Calif. Code of Regs. Title 14 § 460	Present; numerous burrows on-site
<i>Felis concolor browni</i> Yuma mountain lion	Low desert, JTNP, to Colorado River; primarily in dense riparian habitats of river and dense desert wash scrub of canyons, where water and prey are available	Year-around	Fed: none BLM: NECO Calif: SSC	Expected in low numbers throughout area
<i>Odocoileus hemionus eremicus</i> ( <i>O. h. crooki</i> ) Desert mule deer, burro deer	Colorado desert, scattered mountains and bajadas, gen. near dependable water sources	Year-around	Federal: none BLM: NECO State: none	Expected in low numbers throughout area
<i>Ovis canadensis nelsoni</i> Nelson's bighorn sheep	Open shrublands and conifer forest, remote mountains; scattered populations in desert mountains and surrounding ranges, incl. Transverse and Peninsular ranges	Year-around	Fed: none BLM: Sensitive, NECO Calif: S3, FP (selected populations)	Expected in low numbers, mainly to move among mountain ranges

General References: American Ornithologists Union 1998 (including supplements through 2011); Barbour and Davis 1969; Feldhammer et al. 2003; Garrett and Dunn 1981; Grinnell and Miller 1944; Hall 1981; Jennings and Hayes 1994; Rosenberg, et al. 1991; Schuford and Gardali 2008; Stebbins 2003; Wilson and Ruff 1999.  
Conservation Status and Occurrence Probability defined above (Table 3).

Focused surveys for desert tortoise were conducted over 100 percent of the larger, northeastern parcel during spring 2010 (AMEC 2011b) and the smaller, southwestern parcel in spring 2011 (AMEC 2011c), as well as adjacent buffer areas, in accordance with USFWS survey protocol (2010). Belt transects, spaced 10 meters (m) apart, were systematically walked over both parcels. When observed, any potential desert tortoise sign (e.g., burrows) was documented on appropriate survey forms. Potential desert tortoise sign observed was photographed and mapped using handheld GPS equipment. Where present, desert woodrat (*Neotoma lepida*) middens and animal burrows of various kinds (e.g., desert kit fox, coyote, badger, ground squirrel, kangaroo rat) were carefully inspected for presence of desert tortoises and their sign. Parallel belt transects were also walked within the zone of influence around the perimeter of the sites at intervals of 200, 400 and 600 meters. General weather conditions were recorded at the start and end of each survey. Temperatures and time of day were recorded at the start and end of each transect.

Phase II (burrow surveys) for burrowing owls were conducted concurrently with desert tortoise surveys. Each burrow encountered during the desert tortoise survey was examined for sign of desert tortoise activity, as well as burrowing owl activity. These surveys provide data that is equivalent to Phase II burrow surveys (CBOC 1993).

Avian point-count surveys were conducted by AMEC biologists during winter and spring of 2011 to comply with BLM requirements (2009b). Winter season point counts were conducted during January 2011, and breeding season point counts were between March 30 and April 28, 2011.

The descriptions of regional golden eagle habitat, nest sites, and territory occupancy are based on the data provided in the Desert Sunlight Solar Farm EIS and supporting documents (BLM 2011b; Ironwood Consulting 2010).

A Mojave fringe-toed lizard habitat evaluation was conducted by Robert Black within the proposed solar facility site boundaries and development footprint on February 25, March 5, and March 12, 2011 to identify potential habitat, individuals, and/or sign that would indicate potential occupancy of the project site by this species.

Aspen biologists evaluated suitability for seasonal Couch's spadefoot breeding habitat on the project site and gen-tie line Alternative E, based on soils and topography observed during vegetation mapping and streambed delineation field work, described in Section 3.3. Desert kit fox burrows and sign were noted during desert tortoise and subsequent vegetation mapping and streambed delineation field work.

## Results and Discussion

### Listed Threatened or Endangered Plants

This section describes species reported from the region that are listed as threatened or endangered under the federal ESA or CESA. One listed threatened or endangered plant, Coachella Valley milk-vetch, has been reported in the Chuckwalla Valley, though that report is now discounted (see below). Other listed threatened or endangered species of the low desert region (e.g., triple-ribbed milk-vetch, Peirson's milk-vetch) occur well outside the area and are not addressed in this report. No listed threatened or endangered plant species, or species proposed for listing or candidates for listing, has been documented from the project site or gen-tie alternative alignments.

**Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*):** Coachella Valley milk-vetch is an annual or short-lived perennial endemic to the Coachella Valley. It is federally listed as endangered, a BLM sensitive species, and ranked as CRPR 1B. It is primarily found on loose aeolian (wind transported) or, less-often, in alluvial (water transported) sands, on dunes or flats and along disturbed margins of sandy washes. The easternmost known occurrences are near Indio, about 45 miles west of the Desert Harvest project area. All designated critical habitat for Coachella Valley milk-vetch is within the Coachella Valley, west of Indio (USFWS 2011a). Specimens resembling Coachella Valley milk-vetch have been collected from the Pinto Wash and Palen dune system, northeast of Desert Center. However, the USFWS (2009; 2011a) regards these as the related variety, speckled milk-vetch (*A. lentiginosus* var. *variabilis*), which has no special conservation status.

DHSP occurrence or effects: The only portion of the project that would affect suitable habitat for Coachella Valley milk-vetch would be gen-tie alignment Alternative E, which would cross dunes and partially stabilized aeolian sand habitat over part of its length. However, since the project area and vicinity are well outside the recognized geographic range, no project impacts to Coachella Valley milk-vetch would be expected.

### BLM Sensitive Plants

The BLM (2010a) maintains a list of Sensitive Species, including species that are rare, declining, or dependent on specialized habitats. The list includes all plants ranked by CNPS and CDFG as CRPR) 1B. The BLM manages sensitive species to provide protections comparable to species that may become listed as threatened or endangered (i.e., candidate species for federal listing). None of these species has been documented from the project site or gen-tie alternative alignments. Each BLM sensitive plant species known from the project vicinity is described briefly, below.

**Chaparral sand verbena (*Abronia villosa* var. *aurita*):** Chaparral sand-verbena's distribution and identification are unclear in published reference works, including Spellenberg (2002), CNPS (2011) and CNDDDB (CDFG 2011). It is a BLM sensitive species, and ranked as CRPR 1B. This plant was added to the CNPS Inventory based on recommendations by Andrew C. Sanders of the UC Riverside Herbarium. The primary conservation concern is for chaparral sand-verbena occurrences in western Riverside County and other locations outside the desert (see Roberts et al. 2004). These western plants appear to be distinct from the very common desert sand verbena, *Abronia villosa* var. *villosa*. Plants in the low desert often match the characteristics of the western Riverside County populations, but they are not regionally rare.

DHSP occurrence or effects: There is some possibility that gen-tie alignment alternative E, and road margins near Highway 95, may support chaparral sand verbena. Road margins are subject to routine vehicle disturbance; project activities would not add to the existing and ongoing disturbance to roadside soils.

**Harwood's woolly-star (*Eriastrum harwoodii*):** Harwood's woollystar is an annual species known only from partially stabilized aeolian sand habitats in the deserts of eastern Riverside and San Bernardino counties (Gowen 2008) and San Diego County (DeGroot 2008). It is a BLM sensitive species, and ranked as CRPR 1B. It flowers in early April.

DHSP occurrence or effects: The only portion of the project that would affect suitable habitat for Harwood's woolly-star would be gen-tie alignment Alternative E, which would cross dunes and partially stabilized aeolian sand habitat over part of its length. Spring botanical surveys will be conducted along gen-tie Alternative E in 2012 to determine presence or absence of this species.

**Orocopia sage (*Salvia greatae*):** Orocopia sage is a shrubby sage with spiny leaves and lavender flowers. It is a BLM sensitive species, and ranked as CRPR 1B. It is endemic to the Orocopia and Chocolate mountains, Riverside County, where it occurs in desert washes below about 2800 feet elevation. It also has been reported from the Mojave Desert in San Bernardino County, though that report almost certainly refers to a misidentification of Death Valley sage (*S. funerea*) (A. Sanders, UC Riverside, pers. comm.).

DHSP occurrence or effects: Habitat on the project site appears to be suitable, but the site is a few miles north of its known geographic range. It has not been located on the site during field surveys, but there is a low probability that it may occur on the site.

**Mesquite neststraw (*Stylocline sonorensis*):** Mesquite neststraw is known from southeastern Arizona and northeastern Sonora, Mexico. It has only been documented at one California location, near Hayfields Dry Lake, where it was collected in the 1930s. It is now presumed extirpated in California. It is ranked as CRPR 1A. Its habitat is reported as "grassy hillsides, sandy drainages, with mesquite" (Morefield 2006).

DHSP occurrence or effects: The only potential habitat in the project area is along gen-tie alignment Alternative E, on valley-floor drainages. Mesquite nest-straw is not expected to occur in the project area due to its apparent extirpation in California.

## Other Special-Status Plants

In addition to the statutes and policies described above, several public agencies and private entities maintain lists of plants and animals of conservation concern. The CDFG compiles these in its compendia of "Special Plants." These plants are treated here as "special status species." All plants of the region that

are included in CDFG and CNPS rankings as CRPR 2, 3, or 4 are included in Table 3, but only those species reported from the site are addressed below.

**Emory's crucifixion thorn (*Castela emoryi*):** Emory's crucifixion thorn is endemic to the Sonoran and southern Mojave Deserts of the American southwest. It is widely scattered in southwestern Arizona; its scattered occurrences in the California deserts are the western extent of its range (Turner et al. 1995). The most well known stand is at the Crucifixion Thorn Natural Area (CTNA) in Imperial County, California. It also occurs at a few sites in northwestern Sonora, Mexico, and in northern Baja California immediately adjacent to the CTNA. Emory's crucifixion thorn is a leafless shrub or small tree of washes, non-saline dry lakes, and other sites where water accumulates. The plants are long-lived and densely thorny. The stems are light gray-green, rigid, ascending (directed upward) with stout spine-tipped twigs. Its flowers are inconspicuous and abundant. The fruits, after maturing, remain on the plant for several years. Young plants, prior to fruiting, do not have the characteristic clustered fruits of older plants. Plants occur as scattered colonies, possibly clones, of fairly small size that do not extend far across the landscape (Shreve and Wiggins 1964). Emory's crucifixion thorn is assigned to CRPR 2.3 (rare, threatened, or endangered in California, but more common elsewhere). It is not managed by BLM as a sensitive species (BLM 2010a).

DHSP occurrence or effects: Three individual crucifixion thorn plants were located along the western boundary of the larger, northeastern project parcel, and numerous additional plants were located in the smaller, southwestern parcel (Figure 3). Large stands of crucifixion thorn are described as "crucifixion thorn scrub" (Sawyer et al. 2009), but the density and extent of the plants on the Desert Harvest site do not warrant mapping as a distinct vegetation type.

**Utah vine milkweed (*Cynanchum utahense*, *Funastrum utahense*):** Utah vine milkweed is a perennial herb that dies back to the ground in summer. It ranges from the California deserts to southwestern Utah. Its habitat is desert washes and canyons (Bell 2009). Utah vine milkweed is assigned to CRPR 4.2 (limited distribution, "watch list"). It is not managed by BLM as a sensitive species (BLM 2010a).

DHSP occurrence or effects: It was recorded on the site during 2010 spring botanical surveys (AMEC 2011a; see Figure 3), but was not relocated in subsequent surveys. Aspen botanists located a single Utah vine milkweed a short distance outside the project area while visiting a reference location of slender-spined allthorn (below).

**Slender-spined allthorn (*Koeberlinia spinosa* var. *tenuispina*):** Slender-spined allthorn is a densely-branched shrub, to several meters tall, with dark green bark (Turner et al. 1995). Most verified California locations are within the Chocolate Mountains, a few miles south of the Desert Harvest site, but it also occurred on the Desert Sunlight project site, north of the Desert Harvest site. It resembles crucifixion thorn (above), and is distinguished by stems, which are brighter green, not as stout, and branched at right angles rather than ascending). It does not retain fruits on the stems after maturation. It is assigned to CRPR 2.2 (rare, threatened, or endangered in California but more common elsewhere). It is not managed by BLM as a sensitive species (BLM 2010a).

DHSP occurrence or effects: The CNDDDB reported a slender-spined allthorn occurrence in the smaller, southwest parcel of the proposed Desert Harvest project site, but Aspen botanists located that plant and determined that it was a young crucifixion thorn, without fruits on the stems. Based on field survey results, we conclude that slender-spined allthorn is not likely to occur on the site.

**Desert unicorn-plant (*Proboscidea althaeifolia*):** Desert unicorn-plant, also called “devil’s claw,” is a perennial herb that grows from a large rooststock. It is dormant in spring, but sprouts in response to summer rains. It ranges throughout much of the Sonoran Desert, eastward to Texas and parts of mainland Mexico. It is conspicuous for its woody, hook-shaped fruits (pods), that are evidently dispersed by clinging to fur or hooves of large mammals. It is ranked as CRPR 4.3 (limited distribution, “watch list”). It is not managed by BLM as a sensitive species (BLM 2010a).

DHSP occurrence or effects: Desert unicorn-plant was located at several sites on the Desert Harvest project site and along gen-tie alignment Alternative E during fall, 2011, but not fall 2010 (Figure 3).

## Listed Threatened or Endangered Wildlife

This section includes species listed as threatened or endangered under CESA or ESA. One listed threatened or endangered species, the desert tortoise, occurs near the project site. Two others (Gila woodpecker and Swainson’s hawk) have been observed on or near the site during migratory or wintering seasons, but are not expected to use the site for breeding. Other listed species of the region are either limited to riparian and aquatic habitats (e.g., southwestern willow flycatcher, least Bell’s vireo, and desert pupfish) or occur well outside the area (e.g., Coachella Valley fringe-toed lizard).

**Desert Tortoise (*Gopherus agassizii*):** The desert tortoise is listed as threatened under CESA, and the Mojave population (i.e., west of the Colorado River) is listed as threatened under the federal ESA. East of the Colorado River, the desert tortoise’s range extends into the Arizona deserts, and south through Sonora (Mexico). Tortoises east of the Colorado River have been considered a separate population of the same species, but recent work by Murphy et al. (2011) suggests that they should be recognized as a distinct species, Morafka’s desert tortoise (*Gopherus morafkai*). All wild desert tortoises in California are part of the state and federally listed Mojave population.

The USFWS reviewed desert tortoise biology and population status in the recent Revised Recovery Plan (USFWS 2011c). The following summary is based on that review and literature cited therein. Desert tortoises spend much of their lives in burrows. They enter hibernation during autumn. In late winter or early spring, they emerge from over-wintering burrows and typically remain active or partially active through fall. Activity decreases in summer, but tortoises often emerge after summer rain storms to drink and to take advantage of seasonal food availability during the few weeks following late summer rains. They may become dormant during extended periods of summer heat and dryness. A single tortoise may have a dozen or more burrows within its home range, and different tortoises may use these burrows at different times. Even during their active seasons, they are inactive during much of the day or night, within burrows or at “palettes” (partially sheltered flattened areas, often beneath shrubs or large rocks) or other shaded sites.

Adult desert tortoises lose water at such a slow rate that they can survive for more than a year without access to free water of any kind and can apparently tolerate large imbalances in their water and energy budgets. During periods of inactivity, their metabolism and water loss are reduced. Desert tortoises eat a wide variety of herbaceous vegetation, particularly grasses and the flowers of annual plants.

Desert tortoise habitats include many landforms and vegetation types of the Mojave and Sonoran deserts, except the most precipitous slopes. Friable soils, such as sand and fine gravel, are important for burrow excavation and nesting, and the availability of suitable soils is a limiting factor to desert tortoise distribution.

The sizes of desert tortoise home ranges vary with respect to location and resource availability, and may vary among years. Male tortoises' home ranges can be as large as 200 acres, while females' long-term home ranges may be less than half that size. Core areas used within tortoises' larger home ranges depend on the number of burrows. Over its lifetime, a desert tortoise may use more than 1.5 square miles of habitat and may make periodic forays of several miles at a time.

Tortoises are long-lived and grow slowly. They require 13 to 20 years to reach sexual maturity. Their reproductive rates are low, though their reproductive lifespan is long. Mating may occur both during spring and fall. The number of clutches (set of eggs laid at a single time) and number of eggs that a female desert tortoise produces is dependent on habitat quality, seasonal food and water availability, and the animal's physiological condition. Egg-laying occurs primarily between April and July; the female typically lays 2-14 (average 5-6) eggs, which are buried near the mouth of a burrow or beneath a shrub. The eggs typically hatch 90 to 120 days later, between August and October. Clutch success rates are unknown and nest predation rates are variable, but predation appears to be an important cause of clutch failure.

Desert tortoise population trends have been difficult to discern. The USFWS (2011c) reviews population monitoring efforts dating back to the 1980s, and concludes that available data provide qualitative (not quantitative) insight to range-wide trends, and show appreciable declines at the local level in some areas. A more formal and consistent range-wide monitoring study was initiated in 2001, but no range-wide trend has been identified over that period.

Desert tortoise populations are threatened by several factors, each of which tends to be exacerbated by the others and most of which are associated with human land uses and other human activities. Most threats identified in the 1980s as the bases for state and federal listing continue to affect tortoise populations today. Habitat degradation and loss due to land use conversion, grazing, mining, energy development, and transportation projects have all contributed to declining tortoise numbers and fragmented populations. Off-road vehicle use degrades habitat and causes direct mortality from vehicle collision or crushed burrows. Desert tortoises are also vulnerable to vehicle collisions on roads and highways. Drought, habitat degradation, and associated weed invasion lead to reduced nutrient quality of food plants; this increases desert tortoise susceptibility to upper respiratory tract disease, and possibly other diseases, which can be fatal and is transmittable among populations. Juvenile tortoises are vulnerable to predation by ravens; juvenile and adult tortoises are preyed upon by coyotes and domestic and feral dogs. Infrastructure development and urbanization creates perch sites and food and water sources for ravens, and increases numbers of dogs and coyotes, all of which elevate predation pressure on tortoises. Other factors affecting tortoises and their habitat include illegal collecting, vandalism, livestock grazing, feral burros, invasive non-native plants, changes to natural fire regimes, and environmental contaminants. Habitat fragmentation and development can isolate tortoise populations, further increasing risk of disease and reducing genetic diversity. This range of threats can kill or indirectly affect desert tortoises and their habitat, but little is known about the relative contribution each threat makes to tortoise demography. Current recovery planning (USFWS 2011c) focuses on expanding the knowledge of individual threats and places emphasis on understanding their multiple and combined effects on tortoise populations.

*DHSP occurrence or effects:* The DHSP site is not within designated critical habitat for the desert tortoise, but portions of the transmission line alternative alignments are within the Chuckwalla Critical Habitat Unit, west of Kaiser Road and near the I-10 Freeway (see Figure 6). The USFWS (2011c) identifies five recovery units for the desert tortoise based largely on geographic discontinuities or barriers that

coincide with observed variation among tortoise populations. The DHSP and the gen-tie alternatives are located in the Colorado Desert Recovery Unit.

The nearest documented desert tortoise locations are on the Desert Sunlight project site, about 0.3 mile north of the DHSP site, and on gen-tie alignments B, C, and D (BLM 2011a; Ironwood Consulting 2010). In addition, a road-killed desert tortoise was observed at the Eagle Mountain off ramp on east-bound Interstate 10 approximately 7.5 miles southwest of the site (AMEC 2011a).

No live desert tortoises or recent sign were observed on the DHSP site or adjacent areas during the 2010 and 2011 field surveys. However, several desert tortoise burrows, designated as class 2 (good condition) and class 3 (deteriorated condition), and several disarticulated bone fragments, possibly originating from a desert tortoise, were located on the site. None of the burrows or other sign exhibited any evidence of recent use or corroborating sign. The occurrence of tortoise sign, even where no living tortoises are found during surveys, indicates desert tortoise presence (USFWS 2010a). Desert tortoises are found throughout the region and are mobile during their active seasons. Based on the presence of active desert tortoises on the adjacent project site and gen-tie alignments, we conclude that the entire Desert Harvest project site and all gen-tie alignments may be occupied by desert tortoises at any time, albeit only in low numbers. Project development would eliminate 1,208 acres of desert tortoise habitat and could kill or injure desert tortoises on the site. Project development will necessitate consultation between the BLM and USFWS per Section 7 of the ESA, and permitting from CDFG under Section 2080.1 or 2081 of the California Fish and Game Code.

**Gila woodpecker (*Melanerpes uropygialis*):** The Gila woodpecker is listed as endangered under CESA but has no status under the federal ESA. It is a bird species of conservation concern (USFWS 2008). Its geographic range is generally in southern Arizona and southward into Baja California and western mainland Mexico. It occupies this range year-around (i.e., it is not migratory). In California, Gila woodpeckers are known from riparian forests along the Colorado River, and from desert wash woodlands in Imperial County (McCreedy 2008). It excavates cavity nests in large riparian trees such as cottonwoods and (in upland habitats) saguaro cacti, and feeds largely on insects, mistletoe berries, and cactus fruits (Rosenberg et al. 1991; McCreedy 2008). Its primary habitat is Cottonwood-Willow Riparian Woodland, but it also uses thickets of other desert trees (e.g., desert ironwood), as well as upland habitats, especially outside the breeding season. Desert ironwood is apparently too dense for nest excavation. Where Gila woodpeckers occur in dry desert wash woodlands, they excavate cavity nests “invariably” in large blue palo verdes rather than ironwood (McCreedy 2008). In suburban habitats, they nest in ornamental trees including athel (*Tamarix aphylla*), gum trees (*Eucalyptus* spp.), and palms. Availability of suitable nesting trees is apparently a limiting factor in breeding habitat suitability (Grinnell and Miller 1944).

DHSP occurrence or effects: A Gila woodpecker was observed in the southeastern part of the project site in December 2010, but was not seen again during the BLM protocol winter season or breeding season avian point counts (AMEC 2011d).

The Desert Harvest project site is about 40 miles west of the Gila woodpecker’s published geographic range (McCreedy 2008), but unpublished observations have been reported from Corn Springs, about 11 miles south of the site and about five miles south of the southern end of the gen-tie alignments (C. McGaugh, AMEC, pers. obs.). There is a native palm grove at Corn Springs, and Gila woodpeckers may nest in the palm trees. Also, a Gila Woodpecker was reported on September 28, 2010 during field surveys for the Desert Sunlight project (AMEC 2011d). It is possible that the Corn Springs and Desert Center areas support a small Gila woodpecker population, or that the two local observations in late 2010 were chance observations of an itinerant individual.

Desert wash woodlands on the Desert Harvest site may provide suitable nesting and foraging habitat for Gila woodpecker. The woodlands are dominated by desert ironwood trees, and most of the blue palo verdes are too small for cavity nests. However, scattered larger blue palo verde trees are present in low numbers throughout the woodlands, and could serve as suitable nest trees.

Although no Gila woodpecker observations were made on the site during breeding season surveys, it is possible that they may nest in desert wash woodland habitat on or near the site. Project development would eliminate up to 180 acres of potential nesting and foraging habitat for Gila woodpecker on the proposed solar generator site, and could also affect smaller areas of suitable habitat along gen-tie alignments. Habitat impacts on the gen-tie alignments would generally be limited to small areas around the transmission line structures, and increased human disturbance during construction, operations/maintenance, and decommissioning project phases.

In addition to habitat impacts, the project could cause mortality or injury to a Gila woodpecker (including juvenile birds or eggs), if an active nest were damaged or disturbed during construction or other phases of the project. Potential project impacts would be comparable to those described for nesting birds, below. As a state-listed species, any take of Gila woodpecker would necessitate CESA permitting under § 2081 of the California Fish and Game Code. Avoidance of take, as defined by the Fish and Game Code, could be achieved by implementing measures to avoid all nesting birds (see Native Birds: Migratory Bird Treaty Act / California Fish And Game Code, below).

**Swainson's hawk (*Buteo swainsoni*):** The Swainson's hawk is listed as a threatened species under CESA but has no federal listing status. It is a migratory raptor. It breeds in open plains and prairies in the Great Plains and relatively arid areas of western North America, including the Central Valley and the western Mojave Desert in California. It winters in South America, primarily in Argentina. During the spring and fall migration seasons, Swainson's hawks are observed regularly in southern California.

DHSP occurrence or effects: One Swainson's hawk was observed flying over the Desert Harvest project site during April 2011 (AMEC 2011d). The project area may serve as incidental foraging habitat during migratory seasons, but otherwise would not support Swainson's hawks, due to the distance from its breeding range. Project development would not affect nesting habitat and has little likelihood of adversely affecting Swainson's hawk.

### **Species Protected Under the Federal Bald and Golden Eagle Protection Act**

The Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668-668d; BGEPA) prohibits take of bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*). The BGEPA defines *take* to include "pursuing, shooting, shooting at, poisoning, wounding, killing, capturing, trapping, collecting, molesting, and disturbing." The USFWS (2007) further defines *disturb* as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

**Golden Eagle (*Aquila chrysaetos*):** Golden eagles are year-around residents throughout most of their range in the western United States. In the southwest, they are more common during winter when eagles that nest in Canada migrate south into the region. They breed from late January through August, mainly during late winter and early spring in the California deserts (Pagel et al. 2010). In the desert, they generally nest in steep, rugged terrain, often on sites with overhanging ledges, cliffs or large trees as cover. Golden eagles are wide-ranging predators, especially outside of the nesting season, when they have no need to return daily to eggs or young at their nests.

Threats to golden eagles include illegal shooting, power line electrocution, wind turbine strikes, and rodenticides (used for rodent control, and secondarily ingested by eagles feeding on target pest species). They also are affected by habitat loss or degradation due to land use changes such as urbanization and agriculture. The golden eagle population is estimated at approximately 30,000 in the western U.S., down from an estimated 100,000 in the late 1970s. Survey data from 2003 and 2006 to 2008 indicate a decline of 26 percent since 2003 (USFWS 2009a).

Golden eagle foraging habitat consists of open terrain such as grasslands, deserts, savanna, and early successional forest and shrubland habitats, throughout the regional foothills, mountains, and deserts. They prey primarily on rabbits and rodents but will also take other mammals, birds, reptiles, and some carrion (Kochert et al. 2002).

Absent interference from humans, the densities of breeding golden eagle territories is limited by either prey density or nest site availability (USFWS 2009a). Breeding season home range sizes vary widely. For example, in San Diego County, a study of 27 nesting pairs found breeding ranges to average 36 square miles with a range from 19 to 59 square miles (Johnsgard 1990). Eagles and other raptors forage more widely outside of the nesting season, since they have no need to return daily to eggs or young at their nests.

*DHSP occurrence or effects:* The mountain ranges surrounding the project site provide suitable golden eagle nesting and foraging habitat. Inactive golden eagle nests have been documented to the northwest, northeast, and south of the Desert Harvest site, and one active but non-reproductive nest was reported in the Coxcomb Mountains, about 5 miles northeast of the site (BLM 2011a).

The proposed solar generator site and gen-tie line alignments are on the Chuckwalla Valley floor, and do not provide suitable golden eagle nesting habitat. No on-site impacts to nest sites are expected, but golden eagles are sensitive to human disturbances during the nesting season. If there is an active nest nearby, then human activity and noise during project construction could adversely affect golden eagle nesting success. Most golden eagle nests in the surrounding mountain ranges were inactive in 2010 (Ironwood Consulting 2010). There was golden eagle activity, but not reproduction, at one nest site northeast of the DHSP site. However, even if golden eagle territories may be inactive in a given year, they may be used in future years. Therefore, unoccupied territories are considered potentially active in future years.

The project site and gen-tie alignments provide suitable golden eagle foraging habitat. Golden eagles could forage at the Desert Harvest site at any time of year. Foraging birds could include mated pairs using the surrounding nesting territories; or, if the territories are inactive, unmated golden eagles or adult birds whose nests may have failed, could forage over the site during breeding season. Foraging would probably be somewhat more common during winter and migration seasons due to larger numbers of golden eagles in the region and their larger winter foraging ranges.

If the project would take golden eagles, as defined by the BGEPA and USFWS (2007), above, then consultation with the USFWS would be required. The USFWS recommends evaluating potential impacts to nesting and foraging golden eagles by evaluating eagle use of the area and inventorying golden eagle territories if suitable nesting, roosting, and foraging habitat are present on a proposed project site or within a 10-mile radius of the site (Pagel et al. 2010). In addition to its federal status under the BGEPA, the golden eagle is designated by the California Fish and Game Code as a fully protected species and by BLM as a sensitive species (below).

## Wildlife Species Fully Protected Under the California Fish and Game Code

Under the state Fish and Game Code, selected fish and wildlife species are designated as fully protected, prohibiting take except under permit for scientific purposes. Most of the designated fully protected species occur well outside the project vicinity, but several could occur in the area. These are: golden eagle (discussed above, Species Protected under the Bald and Golden Eagle Protection Act), selected populations of Nelson's bighorn sheep (discussed below, BLM Sensitive Wildlife Species), American peregrine falcon, and ring-tailed cat.

**American peregrine falcon (*Falco peregrinus*):** Peregrine falcons were formerly listed under CESA and ESA, but have been delisted under both Acts. They are found irregularly in the region, generally during migratory and winter seasons. They have not been known to nest in the region in recent decades, though they did nest in desert mountain ranges near the Colorado River historically (Rosenberg et al. 1991; Patten et al. 2003). They feed primarily on birds captured during flight. Waterfowl and shorebirds make up a large proportion of their prey, and nest sites are often within foraging range of large water bodies.

DHSP occurrence or effects: Project implementation would not affect nesting habitat and has little likelihood of adversely affecting foraging behavior.

**Ring-tailed cat (*Bassariscus astutus*):** The ring-tailed cat, or ringtail (it is unrelated to true cats), occurs throughout much of California and southwestern North America, in many habitat types, including forests, woodlands, and deserts. In deserts, it generally is found in steep or rocky terrain, and uses rock piles and bedrock crevices for shelter. It also dens in burrows, tree cavities, or brush piles (Wilson and Ruff 1999).

DHSP occurrence or effects: Habitat in the regional mountain ranges is suitable for ringtail, though habitat on the project site appears to be poorly suitable due to lack of suitable den sites and relatively low cover or shelter availability. The project is unlikely to cause take or other adverse impacts to ringtails.

## BLM Sensitive Wildlife Species

The BLM maintains a list of Sensitive Wildlife Species, including species that are rare, declining, or dependent on specialized habitats (BLM 2010b). It manages sensitive species to provide protections comparable to species that may become listed as threatened or endangered (i.e., candidate species for federal listing). In addition to species addressed in this section of the BRTR, all listed threatened or endangered species (above) are managed as BLM sensitive species.

**Couch's spadefoot (*Scaphiopus couchi*):** Couch's spadefoot, like other spadefoot species, is an amphibian with appearance and life history characteristics similar to the true toads (*Bufo* spp.) but distinguished from that genus by several characteristics, especially the thickened sharp-edged "spades" on the hind feet, used for burrowing (Stebbins 2003). Couch's spadefoot is almost entirely terrestrial. It is dormant in burrows 20 to 90 cm deep for 8 to 10 months of the year (Jennings and Hayes 1994). It is active on the surface only during periods following warm summer rains, when it emerges to feed on insects and to reproduce. Successful reproduction requires warm rain pools which must hold water long enough to allow the eggs hatch and the tadpoles to develop, and then metamorphose into juvenile spadefoots. This has been reported to occur in as few as 7 to 10 days (Jennings and Hayes 1994; Grismer 2002), one of the fastest rates of metamorphosis among the frogs and toads.

In addition to summer rain pools, Couch's spadefoot requires soft, sandy soils for burrowing and generally is found at the edges of arroyos or in open soil around the bases of shrubs (Grismer 2002). Adult spadefoots make seasonal movements to and from breeding pools, but movement distances are unknown for this and other spadefoot species (Morey 2005).

Couch's spadefoot is widespread in the southwestern US and Mexico. The Colorado Desert in California is at the western margin of its geographic range. Stebbins (2003) indicates that it is restricted in California to a corridor immediately adjacent to the Colorado River, though Morey (2005) indicates a much broader distribution in the California deserts. In California, Couch's spadefoot is threatened by habitat conversion for other uses. It is ranked as a Species of Special Concern by CDFG and as a Sensitive Species by BLM.

DHSP occurrence or effects: Topography and drainage channel morphology on the proposed solar generation site and along the proposed gen-tie line indicate that no suitable breeding pools would form or hold rain water long enough for spadefoot reproduction. Upland habitat may be suitable as winter dormancy/burrowing habitat, depending upon the project site's proximity to breeding pools, the species' movement distances between borrow and breeding sites, and any specific habitat requirements for burrowing sites. Project development would not be expected to impact Couch's spadefoot breeding habitat and potential impacts to winter dormancy habitat appear to be minimal, based on lack of breeding pools in the area.

**Banded Gila monster (*Heloderma suspectum cinctum*):** The Gila monster is rare in California, and more common in Arizona and northwestern Mexico. It is a large and distinct lizard, but is difficult to observe even in areas where its occurrence is known. As a result, little is known about its distribution, population status, and life history in California. Most historical observations in California have been in riparian areas or at moderate elevations of the higher desert mountain ranges, in rocky, incised topography (Lovich and Beaman 2007). In California, the Gila monster is apparently confined to the eastern deserts (east of 116° longitude) where summer rainfall makes up 25 percent of average annual precipitation (Lovich and Beaman 2007). There has been only one report from farther west (the Mojave River). Throughout its range, the Gila monster appears to be most active during or following summer rains.

DHSP occurrence or effects: The project site may be west of the banded Gila monster's range, and habitat on the site appears to be only marginally suitable. Project development is unlikely to affect banded Gila monster.

**Mojave fringe toed lizard (*Uma scoparia*):** The Mojave fringe-toed lizard is known almost exclusively from California, primarily in San Bernardino and eastern Riverside Counties (Jennings and Hayes 1994). It is a California Species of Special Concern and BLM Sensitive Species. The northern lineage, associated with the Amargosa River drainage system, is under review for federal listing as a threatened or endangered population (USFWS 2008b), but its geographic range is well north of the DHSP site. The southern lineage is more widespread, ranging through the Mojave River drainage system, Bristol Trough, Clark's Pass (including the Chuckwalla Valley, Palen Lake and Pinto Wash), and the Colorado River sand transport systems.

The Mojave fringe-toed lizard is related to two other special-status species: the Colorado Desert fringe-toed lizard (*U. notata*), a BLM Sensitive Species that is found farther to the south; and the Coachella Valley fringe-toed lizard (*U. inornata*), a federally listed threatened and state listed endangered species endemic to the Coachella Valley, west of the Desert Harvest site. In addition, the flat-tailed horned lizard

(*Phrynosoma mcallii*) is a special-status species of similar habitats, but its geographic range is also well south of the Desert Harvest site.

The Mojave fringe-toed lizard is primarily insectivorous. It hibernates during winter, and emerges from hibernacula in March or April. During April and May, while temperatures are relatively cool, it is active during mid-day; during summer, it is active in mornings and late afternoon, but seeks cover during the hottest parts of the day.

The Mojave fringe-toed lizard is primarily found in fine, loose, aeolian (windblown) sand habitat (Turner et al. 1984; Jennings and Hayes 1994; Stebbins 1944). Availability of soft sand is an essential habitat component, though the lizards will also use other substrates surrounding aeolian sands. Mojave fringe-toed lizards burrow in the sand to avoid predators and to thermoregulate (Stebbins 1944), and lay their eggs in sand. Sand dunes are its primary habitat, although it also uses sands and surrounding habitats at the margins of dry lakebeds, washes, and isolated blow-sand pockets against hillsides (BLM and CDFG 2002), and mixed habitat such as hummocks or pockets of soft sand interspersed with hard-packed sand (Cablak and Heaton 2002).

The Mojave fringe-toed lizard is widespread in the Mojave and northern Colorado deserts, but its distribution is patchy, reflecting the patchy distribution of suitable habitat (Murphy et al. 2006). Some localized populations consist of only a few animals in small, isolated habitat patches. This fragmented distribution leaves local populations vulnerable to extirpation from habitat disturbance, further fragmentation, or stochastic events (Murphy et al. 2006). Aeolian sand habitat is vulnerable to direct and indirect disturbances (Weaver 1981; Beatley 1994; Barrows 1996). Environmental changes that stabilize sand, affect sand sources, or block sand movement corridors will, in turn, affect Mojave fringe-toed lizard habitat and populations (Turner et al. 1984; Jennings and Hayes 1994). Threats to Mojave fringe-toed lizards and their habitat include habitat loss or damage from urban and agricultural development, vehicles, and indirect effects such as invasive weeds and increased habitat access by common ravens or other predators. Another important indirect disturbance is the potential disruption of sand source for the dune systems. Dune habitat that is cut off from its sand source will degrade over time as finer sands are blown away, leaving behind smaller dunes composed of coarser-textured sand.

*DHSP occurrence or effects:* Based on a habitat evaluation by Robert Black (2011), the DHSP site does not appear to provide suitable habitat for Mojave fringe-toed lizard. Ephemeral washes and channels throughout the proposed solar generator site provide patchy alluvial sand habitats but the sand was often cemented or compacted, and the sand depth and coarse texture were poorly suitable for Mojave fringe-toed lizard. The few isolated areas where deeper, loose sand was present were not large enough to support Mojave fringe-toed lizard.

Mojave fringe-toed lizards occur in aeolian sand habitat at the base the Coxcomb Mountains, east of Pinto Wash, about 1 mile northeast of the Desert Harvest project site. Aeolian sand in this area is within a sand transport corridor, originating upslope in JTNP, and continuing southeast to the Palen Dunes. The Desert Harvest project site is outside that sand transport corridor. The site is immediately downslope and downwind from the approved Desert Sunlight project area, now under construction. Environmental analysis of the Desert Sunlight project (BLM 2011) concluded that the site was not within the sand transport corridor, and that project development would not affect sand migration in the Pinto Wash / Palen Dunes corridor. However, portions of gen-tie Alternative E are within suitable habitat for Mojave fringe-toed lizard, and development of that alternative would be likely to take habitat and possibly take individual lizards. Based on our field work on the site, and on the analysis of adjacent Desert Sunlight project, we conclude that development of the other Desert Harvest project components (the solar

generator site and gen-tie Alternatives B, C, or D) would not substantially affect Mojave fringe-toed lizard or aeolian sand transport in the Chuckwalla Valley.

**Burrowing owl (*Athene cunicularia*):** The burrowing owl is a BLM Sensitive Species and a CDFG Species of Special Concern. As a native bird, it is also protected by the federal Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code (below). It is a small, terrestrial owl of open country. During breeding season, it ranges throughout most of the western US. It occurs year-around in southern California, but may be more numerous during fall and winter, when migratory individuals from farther north join the regional resident population. Burrowing owls favor flat, open annual or perennial grassland or gentle slopes and sparse shrub or tree cover. They use the burrows of ground squirrels and other rodents for shelter and nesting. Availability of suitable burrows is an important habitat component. Where ground squirrel burrows are not available, the owls may use alternate burrow sites or man-made features (such as drain pipes or debris piles). In the California deserts, burrowing owls generally occur in low numbers in scattered populations, but they can be found in much higher densities near agricultural lands where rodent and insect prey tend to be more abundant (Wilkerson and Siegel 2011). Burrowing owl nesting season, as recognized by the California Burrowing Owl Consortium (CBOC 1993), is 1 February through 31 August.

DHSP occurrence or effects: During the desert tortoise surveys for the Desert Harvest project site (above), AMEC field biologists examined all suitable burrows for sign of burrowing owls. These field surveys correspond to 100 percent coverage Phase II surveys for burrowing owls, recommended by the CBOC protocol (1993). No burrowing owls or their sign were observed during these spring season surveys, or during the winter and breeding season avian point count surveys. Due to the absence of burrowing owl sign, further focused burrowing owl surveys (i.e., Phase III surveys, per. CBOC) were not conducted for this project. However, two incidental burrowing owl observations were made by Aspen biologists during streambed delineation field work. In one observation, a burrowing owl was briefly seen perching and flying, but was not at a burrow. The other observation was a burrowing owl seen in the mouth of an inactive desert kit fox burrow; no burrowing owl sign (e.g., whitewash, prey remains, or owl pellets) was found at the site. Based on these field surveys and incidental observations, we conclude that the site is suitable habitat for burrowing owls during winter or breeding seasons. Breeding burrowing owls were not observed on the site during the surveys, but they could nest on the site in future years. During fall and winter, the site appears to serve as low-density seasonal burrowing owl habitat.

**Bendire's thrasher (*Toxostoma bendirei*):** Bendire's thrasher is a BLM Sensitive Species and CDFG Species of Special Concern. It is also protected under the federal MBTA and California Fish and Game Code, described further below. California populations are migratory, though it is found year-around in more southern portions of its range, in southern Arizona and adjacent Mexico. The Desert Harvest site is near the southern boundary of its breeding range in California. It breeds in open, upland desert shrublands of JTNP and surrounding area, and northward through several disjunct regions of the Mojave Desert (Sterling 2008). Its habitat requirements are poorly understood, but it is generally associated with *Yucca* (e.g., Joshua tree) and *Opuntia* (cholla cacti, also classified as *Cylindropuntia*) species on gently sloping terrain. Soil texture is apparently important to habitat suitability, perhaps because Bendire's thrashers largely forage on ground-dwelling insects. Hard rocky soils (e.g., desert pavement) and loose sands (e.g., dry wash sands) are apparently less suitable than firmly packed, fine-textured soils.

DHSP occurrence or effects: Bendire's thrashers were not observed on the project site during the winter or breeding-season point-count surveys. Habitat throughout the site appears to be of marginal

suitability, due to relatively low cover of *Yucca* and *Opuntia* species, and seemingly poorly-suitable soil texture. There is a low to moderate probability that Bendire's thrasher may occur on the site.

**Lucy's warbler (*Vermivora luciae*):** Lucy's warbler is a migratory songbird that breeds in desert riparian woodlands and winters on Pacific Coast of mainland Mexico. Its breeding range extends through much of Arizona, and parts of the eastern California deserts. It is a cavity-nesting species (i.e., it generally nests in unoccupied woodpecker nests or other cavities in trees). Its primary nesting habitat is mesquite thickets, but also uses native riparian trees and saltcedar (*Tamarix* spp.).

DHSP occurrence or effects: Two singing male Lucy's warblers were reported in April 2011 near the southwestern corner of the project area (AMEC 2011). These birds were not observed later during the nesting season point counts (28 April survey date), but no focused surveys were conducted. It is unknown whether either or both of these birds successfully established breeding territories in the area, or moved on to another site. Suitable nesting cavities may be available in large blue palo verde trees on the site, but probably not in the more dominant desert ironwood trees (see Gila woodpecker discussion, above). The nests of Lucy's warblers are sometimes placed behind loose bark, so there is some potential for them to nest in ironwood trees. Lucy's warblers may nest in desert wash woodlands on or near the proposed solar facility site or gen-tie alignment alternatives.

Project development would eliminate up to 180 acres of potential nesting and foraging habitat for Lucy's warbler on the proposed solar generator site, and could also affect smaller areas of suitable habitat along gen-tie alignments. In addition to habitat impacts, the project could cause mortality or injury to a Lucy's warbler (including juvenile birds or eggs), if an active nest were damaged or disturbed during construction or other phases of the project. Potential project impacts would be comparable to those described for nesting birds, below.

**Nelson's bighorn sheep (*Ovis canadensis nelsoni*):** Nelson's bighorn sheep are known from the Transverse Ranges, California Desert Ranges, Nevada, northern Arizona, and Utah. Its populations in the Peninsular Ranges (the Santa Rosa and San Jacinto Mountains, and southward into Baja California) are federally listed as a threatened distinct vertebrate population segment. However, populations in eastern Riverside County have no CESA or ESA listing status. It is a BLM Sensitive Species and, except where designated otherwise by CDFG, is fully protected under the state Fish and Game Code. Threats to Nelson's bighorn sheep include habitat loss or degradation; limited availability of water sources; barriers to local or regional movement (e.g., highways and aqueducts); disease spread by domestic livestock; and natural predation by mountain lions in some populations.

DHSP occurrence or effects: Habitat in the desert mountain ranges surrounding the upper Chuckwalla Valley is occupied by Nelson's bighorn sheep, and they occasionally use the valley floor habitat. Ungulate tracks, from either Nelson's bighorn sheep or burro deer, were observed on the site during the streambed delineation work. Project construction would not cause habitat degradation in the mountains, though construction could cause noise and human disturbance as described above for golden eagle nesting territories. Bighorn sheep tend to acclimate to these activities in areas where such disturbances occur routinely (e.g., quarries; Jansen et al. 2009). Due to the project's location on the valley floor near sites with comparable land uses and human activity patterns, the project is not likely to affect bighorn sheep behavior or habitat use to any large extent. However, the project could affect bighorn sheep movement among the mountain ranges (see Wildlife Movement, below).

**Bats:** The BLM includes several bat species on its list of sensitive species. The special status bats of the local area roost in rock crevices, tunnels, or caves; one species (western yellow bat, *Lasiurus xanthinus*) roosts in the foliage of riparian trees. Roost sites may be used seasonally (e.g., inactive cool seasons) or

daily (day roosts, used during inactive daylight hours). Maternity roosts are particularly important overall for bat life histories. Knowledge of bat distributions and occurrences is sparse. The majority of adverse impacts to bat populations in the region result from disturbance of roosting or hibernation sites, especially where large numbers of bats congregate; physical closures of old mine shafts, which eliminates roosting habitat; elimination of riparian or desert wash microphyll vegetation which is often productive foraging habitat; more general habitat loss or land use conversion; and agricultural pesticide use which may poison bats or eliminate their prey-base (Pierson & Rainey 1998; Gannon 2003). Bat life histories vary widely. Some species hibernate during winter, or migrate south. During the breeding season, bats generally roost during the day, either alone or in communal roost sites, depending on species. All special-status regional bats are insectivorous, catching their prey either on the wing or on the ground. Some species feed mainly over open water where insect production is especially high, but others forage over open shrublands such as found on the project site.

DHSP occurrence or effects: Project development is unlikely to affect special-status bat roost sites, but would eliminate 1208 acres of desert shrubland foraging habitat, including 180 acres of productive dry desert wash foraging habitat, and would also affect smaller areas of suitable foraging habitat along genetic alignments.

**Palm Springs round-tailed ground-squirrel (*Xerospermophilus tereticaudus chlorus*):** Palm Springs round-tailed ground squirrel (also called Coachella Valley round-tailed ground squirrel) is a California Species of Special Concern, on the BLM Sensitive Species list, and was a candidate for federal listing as threatened or endangered prior to 2010, when it was removed from the list of candidates (USFWS 2010). Until recently, it was believed to be limited in range to the Coachella Valley region. Within that area, its primary habitat is mesquite (*Prosopis glandulosa*) hummocks and associated sand dunes and, to a lesser extent, dunes and hummocks associated with creosote bush or other vegetation. The primary threats to its habitat are land use changes and groundwater pumping, both of which have eliminated much of the honey mesquite from the Coachella Valley area. Recent research indicates that its range is substantially larger than previously understood, extending at least 150 miles northward to Hinkley Valley and Death Valley. Based on this range extension; the protected habitat in Death Valley National Park; and ongoing conservation efforts in the Coachella Valley, the USFWS concludes that it no longer warrants candidate status. The expanded understanding of Palm Springs round-tailed ground-squirrel's geographic range also seems to indicate that it uses a broader range of habitat than previously understood.

DHSP occurrence or effects: Palm Springs round-tailed ground squirrel was reported near the proposed genetic line in the Desert Sunlight EIS (BLM 2011) and on the DHSP site during AMEC's field surveys (2011d). Habitat in that area lacks the aeolian sands and mesquite hummocks that characterize its primary habitat as previously understood (see text under Mojave fringe-toed lizard, above). Palm Springs round-tailed ground squirrel appears to occur throughout the area though, but no mesquite or dune habitat would be affected by the project.

## Other Special-Status Wildlife Species

In addition to the statutes and policies described above, several public agencies and private entities maintain lists of wildlife species animals of conservation concern. The CDFG compiles these in its compendium of and "Special Animals." These species are treated here as "special-status species."

**Rosy boa (*Charina trivirgata*):** The rosy boa occurs in rocky shrublands from sea level to about 6700 feet elevation. In the coastal regions, it is found south and west of the major mountain chains, in the interior valleys and mountains of Los Angeles, Riverside, San Bernardino, and Orange counties,

southward to the coast in San Diego County and Baja California. In the deserts, rosy boas range throughout most of the Mojave Desert and much of the Colorado Desert, eastward into Arizona. They are active during warm seasons, and are primarily nocturnal. The CDFG Natural Diversity Data Base considers rosy boa a “special animal” but it has no formal status under state or federal Endangered Species Acts.

DHSP occurrence or effects: Habitat at the Desert Harvest project site may be marginally suitable for rosy boa, but lacks the boulders or rock crevices of their primary habitat. The site is within their geographic range and could be occupied at low density.

**Raptors:** In addition to raptors discussed above, several other special-status birds of prey are found seasonally, especially during winter, in the region. These include osprey (*Pandion haliaetus*), ferruginous hawk (*Buteo regalis*), Cooper’s hawk (*Accipiter cooperii*), sharp-shinned hawk (*A. striatus*), northern harrier (*Circus cyaneus*), prairie falcon (*Falco mexicanus*), merlin (*F. columbaris*), short-eared owl (*Asio flammeus*), and long-eared owl (*A. otus*) (Table 4). Osprey and sharp-shinned hawk were observed flying over the site during winter season point count surveys, but neither species would nest in the area (AMEC 2011d). Outside their breeding seasons, these raptors need not return to their nests to feed young or tend eggs. Thus, they are able to forage over wide areas, where they capture birds or small mammals. Suitable winter or migratory season foraging habitat for all of these raptors is widely available throughout the region.

DHSP occurrence or effects: Potential project impacts to these species and their foraging habitat would be comparable to those discussed above for wintering golden eagles. In summary, project construction would eliminate 1,208 acres of suitable foraging habitat, cause increased noise and disturbance to adjacent habitat, and may present collision or electrocution hazards, such as the gen-tie line and other project facilities.

**Upland perching birds:** Several upland perching bird species are included in the CDFG Special Animals compilation. These include loggerhead shrike (*Lanius ludovicianus*), Bendire’s thrasher (*Toxostoma bendirei*) LeConte’s thrasher (*T. lecontei*), Crissal thrasher (*T. crissale*), the Eagle Mountains scrub-jay population (*Aphelocoma californica cana*), and vermilion flycatcher (*Pyrocephalus rubinus*). In addition, a Vaux’s swift (*Chaetura vauxi*) was observed over the site during migration season (AMEC 2011); this species occurs in the area only during migration; it nests well to the north, and project development would be unlikely to affect Vaux’s swift.

DHSP occurrence or effects: Loggerhead shrikes were observed on the site routinely throughout the winter and breeding season avian point count surveys (AMEC 2011d). Neither LeConte’s thrasher nor Crissal thrasher have been reported on-site, but habitat is suitable and either species could occur there. Project development would eliminate 1,208 acres of suitable habitat for these species at the solar generator site, and would also affect smaller areas of suitable habitat along gen-tie alignments. Vermilion flycatchers have not been reported on-site, but nest in similar habitat to the south (AMEC 2011d) and could nest in ironwood woodlands on-site in future years. Project development would eliminate 180 acres of suitable desert woodland habitat at the solar generator site, and would also affect smaller areas of suitable habitat along gen-tie alignments. The Eagle Mountains scrub-jay population resides year-around in pinyon woodlands in the Eagle Mountains. It is disjunct from other scrub-jay populations, and is on CDFG’s “watch list” but has no other special conservation status. A scrub-jay was observed on the project site in October 2011; presumably, it was wandering or dispersing from habitat in the Eagle Mountains. However, this bird could have come from much farther away. Scrub-jays of the Great Basin population and can wander considerable distances. However, no suitable

scrub-jay habitat is found in the project area. Other potential impacts to these species would be similar to those discussed below, under the MBTA.

**Wide-ranging mammals:** Several mammal species range widely through desert habitats, either among partially isolated mountain ranges (e.g., Nelson’s bighorn sheep, above) or more often in valleys. These include Yuma mountain lion (*Felis concolor browni*), burro deer, or desert mule deer (*Odocoileus hemionus eremicus* [= *O. h. crooki*]), American badger (*Taxidea taxus*) and desert kit fox (*Vulpes macrotis arsipus*). Desert kit fox is not listed as a special-status species by CDFG or USFWS, but it is protected under the California Code of Regulations (Title 14, § 460).

DHSP occurrence or effects: Sign of American badger and desert kit fox were located on the site during field surveys for desert tortoise and other resources. Ungulate tracks, from either Nelson’s bighorn sheep or desert mule deer, were observed on the site during the streambed delineation work. The project would eliminate approximately 1,208 acres of habitat that is suitable for each of these species, though used only rarely by Nelson’s bighorn sheep, Yuma mountain lion, or desert mule deer.

## WILDLIFE MOVEMENT

The extent, distribution, and accessibility of suitable habitat affect the long-term viability of regional wildlife populations. Fragmentation and isolation of natural habitat ultimately results in the loss of vulnerable native species within those areas (Soulé et al. 1988). Accessibility among habitat areas, i.e., “connectivity,” is important to long-term genetic diversity and demography of wildlife populations. In the short term, it may also be important to individual animals’ ability to occupy their home ranges, if their ranges extend across a potential movement barrier. These considerations are especially important for rare, threatened, or endangered species such as the desert tortoise, and wide-ranging species which exist in low population densities such as large mammals. Therefore, this discussion of potential project impacts to wildlife movement focuses on desert tortoise and Nelson’s bighorn sheep. However, these conditions are also relevant for other species, including corridor “passage” and corridor “dweller” species (Beier and Loe 1992). Corridor passage species would traverse connectivity areas during ordinary diurnal or seasonal movement patterns, whereas corridor dweller species must persist as viable populations over multiple generations within a connectivity area in order to eventually migrate from one habitat block to another. The upper Chuckwalla Valley, where the Desert Harvest site is located, appears to be an important linkage between desert tortoise populations in the Colorado and Mojave deserts (USFWS 2011b).

In landscapes where native habitats exist as partially isolated patches surrounded by other land uses, planning for wildlife movement generally focuses on “wildlife corridors” to provide animals with access routes among habitat patches. In largely undeveloped areas, including the Chuckwalla Valley, wildlife habitat is available in extensive open space areas throughout much of the region, but specific barriers may impede or prevent movement. In these landscapes, wildlife movement planning focuses on specific sites where animals can cross linear barriers (e.g., wash crossings beneath the I-10 freeway), and on broader linkage areas which may support stable, long-term populations of target species.

In the Chuckwalla Valley, the biologically important functions of large mammal movement are the long-term demographic and genetic effects of occasional animal movement among mountain ranges and other large habitat areas. Animals such as Nelson’s bighorn sheep may travel across the valley infrequently, as a part of dispersal among subpopulations. Animals may also use bajada habitat, including habitat on the project site, for seasonal foraging, as part of its regular home range. These large animals are example of corridor “passage” species. In contrast to large animal movement, desert tortoises and other less-mobile animals may live out their entire lives within a linkage area between

larger habitat blocks; for these species, movement among mountain ranges may take place over the course of several generations (Beier and Loe 1992). The USFWS (2011b) recommends maintaining large areas of occupied desert tortoise habitat in important linkage areas, including the upper Chuckwalla Valley. Within these linkage areas, desert tortoises should be “dweller” species.

A state-wide evaluation of habitat connectivity (Spencer et al. 2010) includes the upper Chuckwalla Valley, including the project area, among areas identified as “Essential Connectivity Areas.” The report describes these as follows: “Essential Connectivity Areas are placeholder polygons that can inform land-planning efforts, but that should eventually be replaced by more detailed Linkage Designs, developed at finer resolution based on the needs of particular species and ecological processes” (p. xiii). Spencer et al. (2010) recommend siting renewable energy projects in the Sonoran Desert region where they will not block potential wildlife movement corridors, and make several other recommendations related to roadway crossings and fencing (p. 69). In Chapters 4 and 5, Spencer et al. (2010) provide “frameworks” for regional and local scale connectivity analysis. Within the Chuckwalla Valley, these regional and local analyses have not been completed.

BLM management strategies for wildlife and habitat, including management to maintain connectivity among habitat areas, include special management of Areas of Critical Environmental Concern (ACECs), Wilderness Areas, Wilderness Study Areas, Wildlife Habitat Management Areas (WHMAs) and Desert Wildlife Management Areas (DWMAs). Certain BLM lands within the Chuckwalla Valley and near the Project area are designated as ACECs, WHMAs, and DWMAs (Figure 6). Extensive natural habitat areas within JTNP, north of the project site, are also important to regional wildlife habitat connectivity.

The Chuckwalla Valley is bordered on the south by the Chuckwalla Mountains, south of the I-10; and on the north by the Eagle Mountains and Coxcomb Mountains, both within JTNP, north of the Colorado River Aqueduct (Figure 9). Opportunity for wildlife movement among these mountain ranges is significantly impeded by the I-10 Freeway and the aqueduct. A few other existing linear features (paved roads, the disused Kaiser rail line, unpaved roads, transmission line and pipeline access roads parallel to the freeway) but have only minimal effects on wildlife movement for some species, but may be partial barriers for others. Non-linear impediments to wildlife movement include residential land uses around Lake Tamarisk and Eagle Mountain; the closed Eagle Mountain quarry and associated overburden deposits, evaporation ponds, and other facilities, and the active and disused agricultural lands throughout the valley.

Some species, such as coyote, may learn to cross the freeway safely. But for most terrestrial species the freeway presents an impassable or high risk barrier to north-south movement (evident by the road-killed desert tortoise observed on the Eagle Mountain Road off ramp of the I-10 in 2010). There are potential wildlife crossings beneath the freeway at scattered wash crossings (e.g., box culverts) and at the underpasses at Desert Center Road and Eagle Mountain Road. These crossings are accessible to many terrestrial wildlife species, but many of the box culverts are inaccessible to small animals, probably including desert tortoises, due to vertical steps of about 2 feet on the downstream ends of the culverts (see Photo Exhibits). Also, while the crossings are large enough for physical access to any species, specific behavioral adaptations affect the likelihood that any given species would use them. Mountain lions or coyotes would likely cross through the culverts routinely, but deer and bighorn sheep may avoid them if they perceive the culverts as too confining for escape.

The portion of the aqueduct where water flows in an uncovered surface canal (i.e., through the northern part of the Chuckwalla Valley, near the JTNP boundary) presents an impassable barrier, except at periodic “siphon” points, where desert washes cross over the aqueduct. At these crossings, aqueduct water is carried underground through U-shaped siphons over distances of several hundred feet or more.

Figure 9 indicates the locations of potential wildlife crossings along the freeway and aqueduct. Burro deer have been documented crossing similar aqueduct siphons in Arizona (Tull and Krausman 2001).

The DHSP site is located roughly midway between the three mountain ranges that surround the upper Chuckwalla Valley. Land ownership in the valley is a patchwork of public BLM lands and private lands. Many, but not all, of the private parcels are in land uses incompatible with wildlife habitat or movement. The project site is adjacent to a small (ca. 40 acre) date palm orchard near its southeastern corner; about 1 mile north of agricultural lands on about 1,000 acres; and about 0.25 mile west of another large agricultural tract, also covering about 1,000 acres. These agricultural lands would likely be passable to “corridor passage” species, such as large mammals. Disused agricultural lands may also be suitable for some “dweller” species, including small mammals and reptiles, but they are poorly suitable for desert tortoises. The site presently contributes to suitable desert tortoise movement routes from southwest to northeast, between the Chuckwalla DWMA (west of the site) and the Coxcomb Mountains.

Construction of the Desert Harvest project would exclude most terrestrial wildlife species from the site. The project’s individual impacts to wildlife movement in the area would be relatively unimportant, because extensive areas of natural open space would continue to provide movement habitat around the site, especially to the east and north. However, in combination with other land uses in the Chuckwalla Valley including the recently approved Desert Sunlight project, the Desert Harvest project would contribute to the cumulative loss of wildlife movement habitat, described by the USFWS (2011b). The applicant, enXco, is working with Wildlands, Inc., a private firm specializing in habit preservation and management, to identify and acquire suitable compensation lands to mitigate the project’s potential impacts to regional wildlife movement.

## **NATIVE BIRDS: MIGRATORY BIRD TREATY ACT / CALIFORNIA FISH AND GAME CODE**

The federal Migratory Bird Treaty Act (MBTA) prohibits take of any migratory bird, including eggs or active nests, except as permitted by regulation (e.g., hunting waterfowl or upland game species). Under the MBTA, “migratory bird” is broadly defined as “any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle” and thus applies to most native bird species. California Fish and Game Code § 3503 prohibits take, possession, or needless destruction of bird nests or eggs; § 3503.5 prohibits take or possession of birds of prey or their eggs; and § 3513 prohibits take or possession of any migratory nongame bird. With the exception of a few non-native birds such as European starling, the take of any birds or loss of active bird nests or young is regulated by these statutes. Most of these species have no other special conservation status as defined above.

The entire project site and surrounding area provides suitable nesting habitat for numerous resident and migratory bird species (AMEC 2011d). Many adult birds would flee from equipment during initial vegetation clearance for project construction. However, nestlings and eggs would be vulnerable during project construction. If initial site grading or brush removal were to occur during nesting season, then it likely would destroy bird nests, including eggs or nestling birds. For most birds, these impacts can be avoided by scheduling initial clearing and grading outside the nesting season. Or, if initial clearing and grading are undertaken during nesting season, work may be limited only to areas where no nesting birds are present, as documented by pre-construction nest surveys. One special-status species, the burrowing owl, is unlikely to flee the site during construction even outside the nesting season, due to its characteristic behavior of taking cover in burrows. Avoidance of burrowing owls during initial clearing and grading necessitates pre-construction surveys for active burrows, and follow-up measures to

“passively relocate” the owls if they are present. Passive relocation requires under authorization from CDFG.

Some birds will likely nest in the project area during construction, even after initial grading and clearing. Depending on the species, birds may nest on the ground close to equipment; within the open metal framework of the panel support structures; on buildings, foundations, structures, or construction trailers; or on idle vehicles or construction equipment left overnight or during a long weekend. In areas where construction is phased (e.g., footings or tower structures) birds may quickly use these features as nest sites. The species most likely to nest in the project area during construction are common ravens, house finches (*Carpodacus mexicanus*), and mourning doves (*Zenaida macroura*), all of which are protected by the MBTA and Fish and Game Code §§ 3503 and 3513. Due to the high probability that birds may nest on site during construction, regular monitoring is necessary throughout the breeding season. In some cases, it may be necessary to reduce buffer areas or to remove or relocate a bird nest in coordination with the resource agencies to proceed safely with construction.

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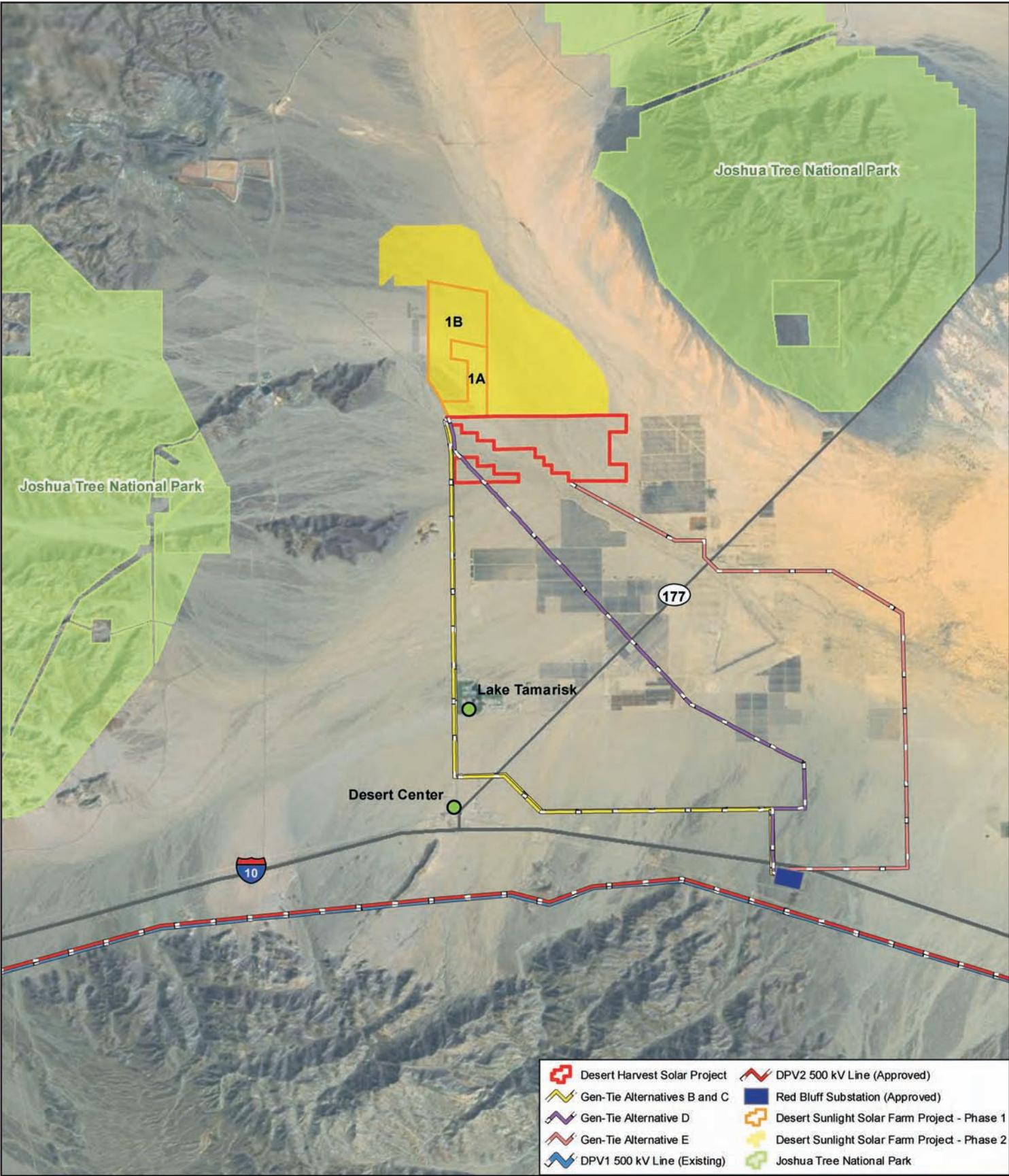
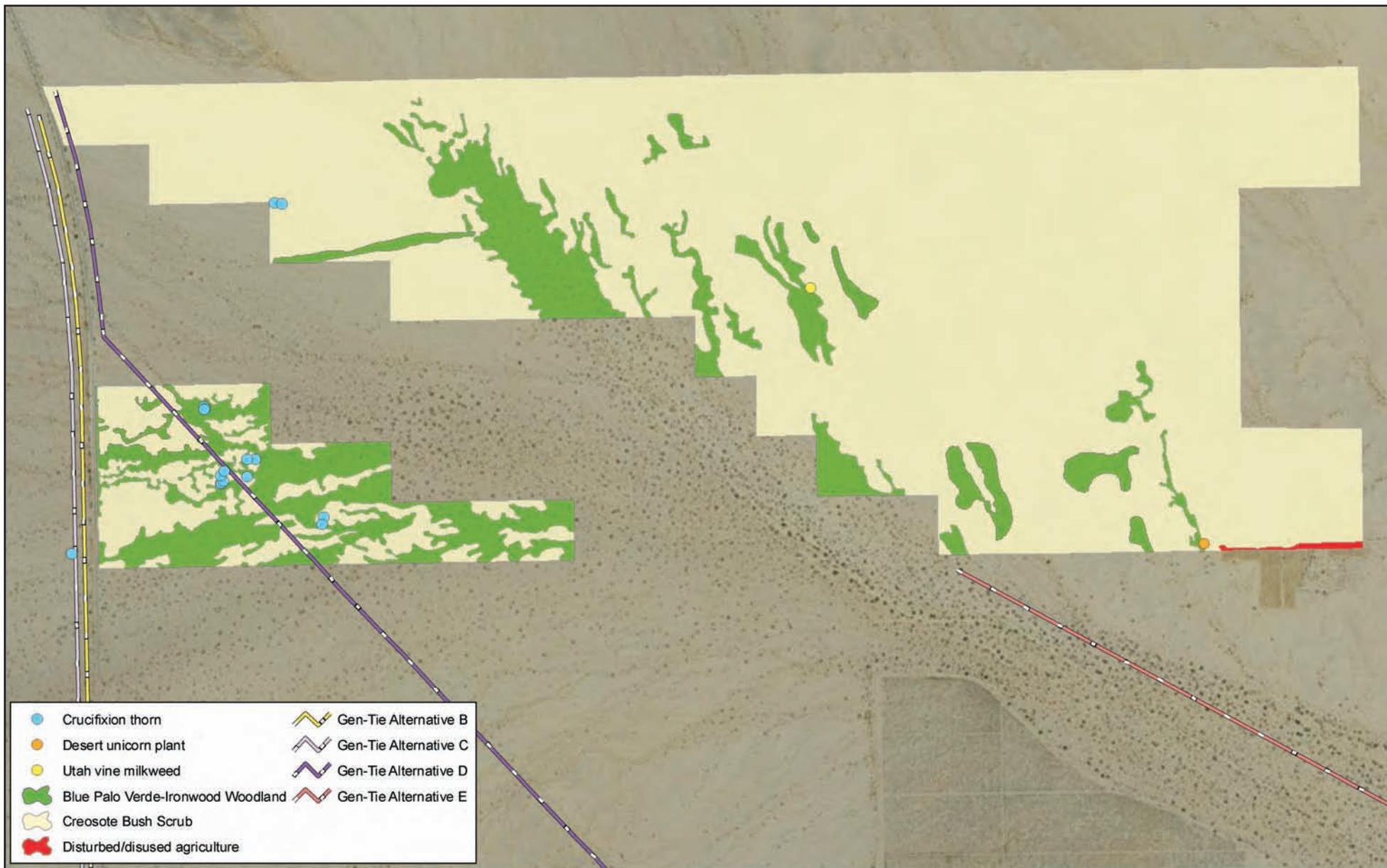
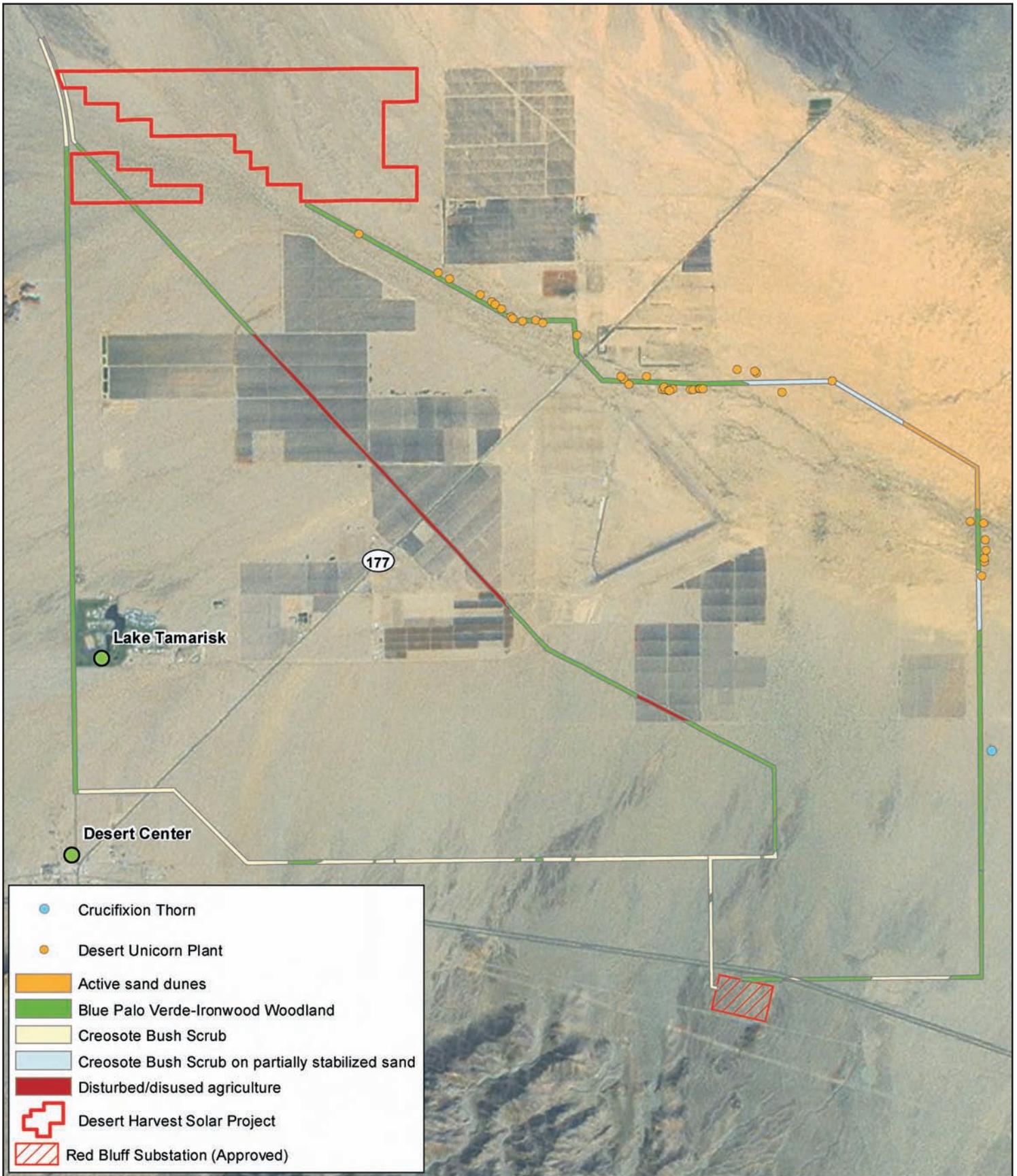


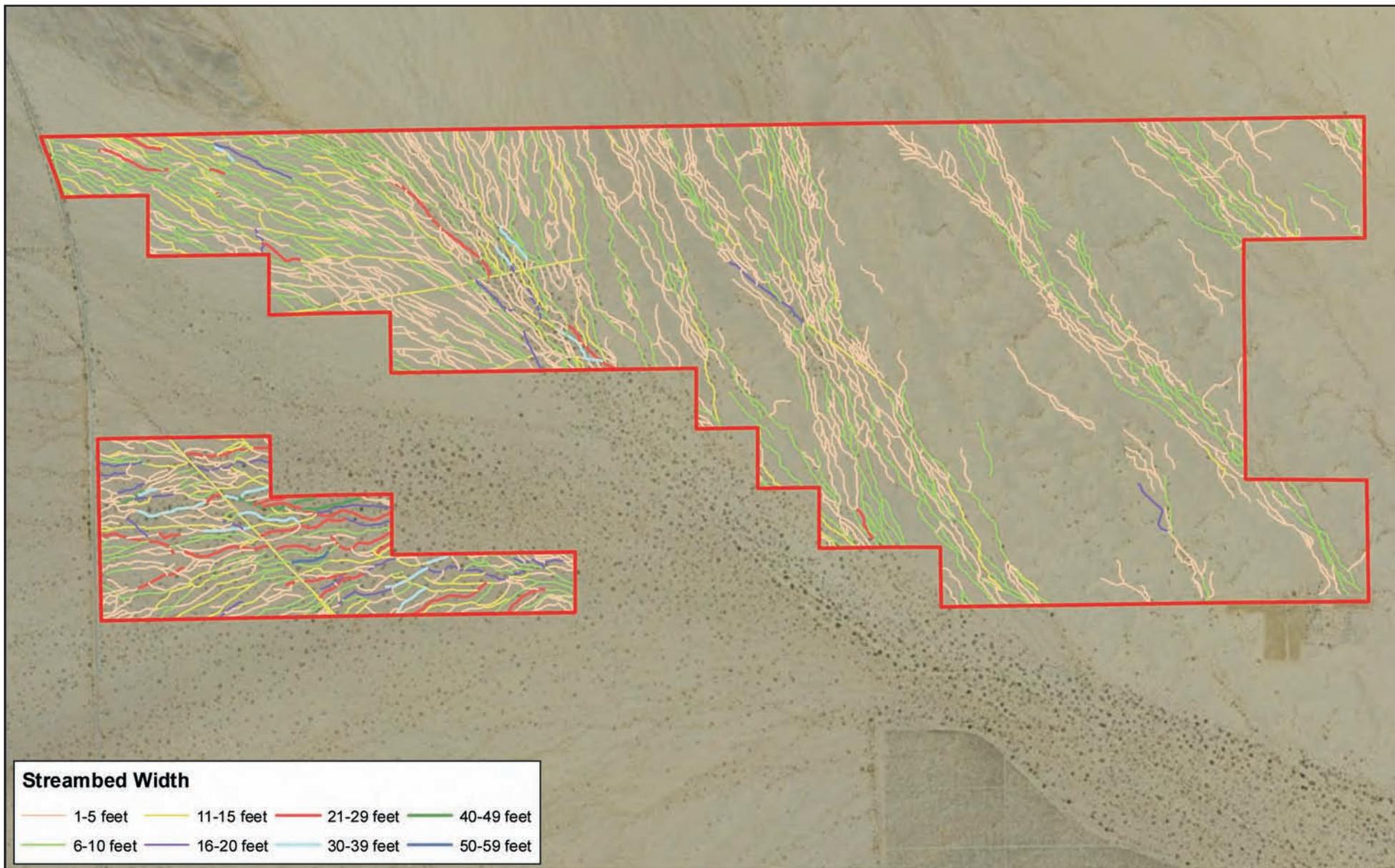
Figure 2  
Project and Vicinity



**Figure 3**  
**Vegetation and Special Status Plant Locations:**  
**DHSP site**



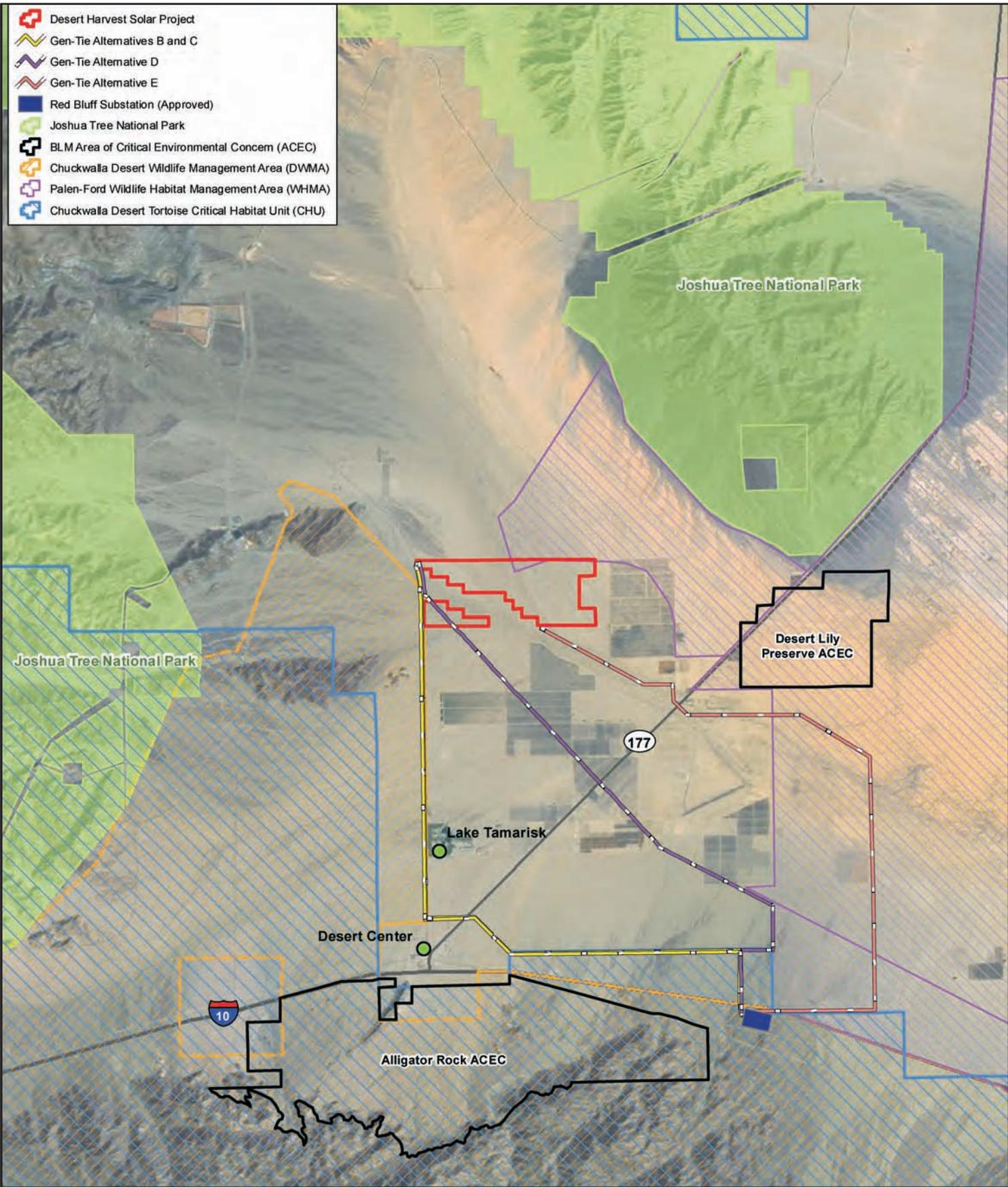
**Figure 4**  
 Vegetation and  
 Special Status Plant Locations:  
 Gen-tie Line Alignments



Desert Harvest Solar Project



**Figure 5**  
**CDFG Jurisdictional Streambeds**



**Figure 6**  
**Wildlife Management Areas**

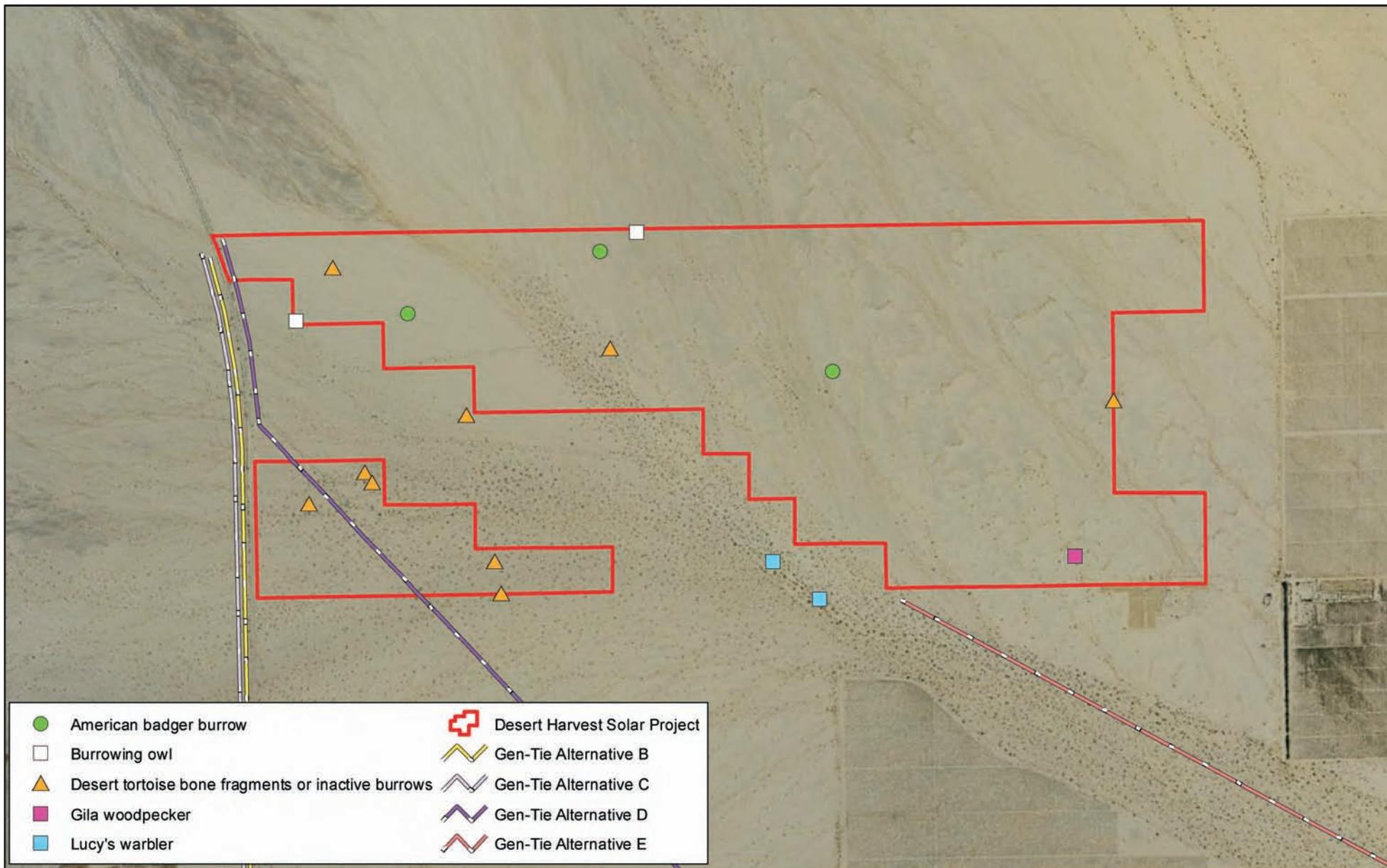
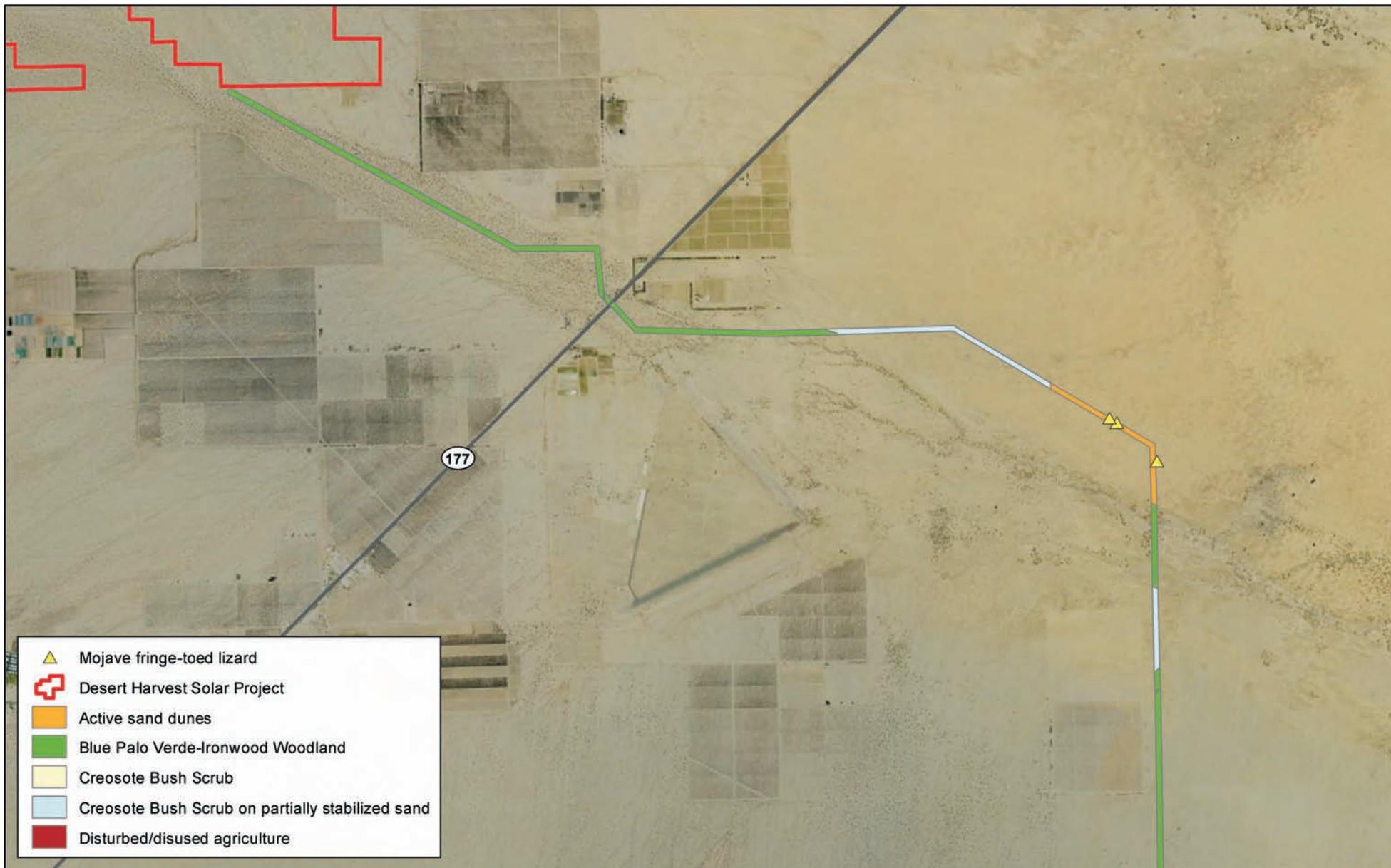


Figure 7  
Special Status Wildlife Locations:  
DHSP site



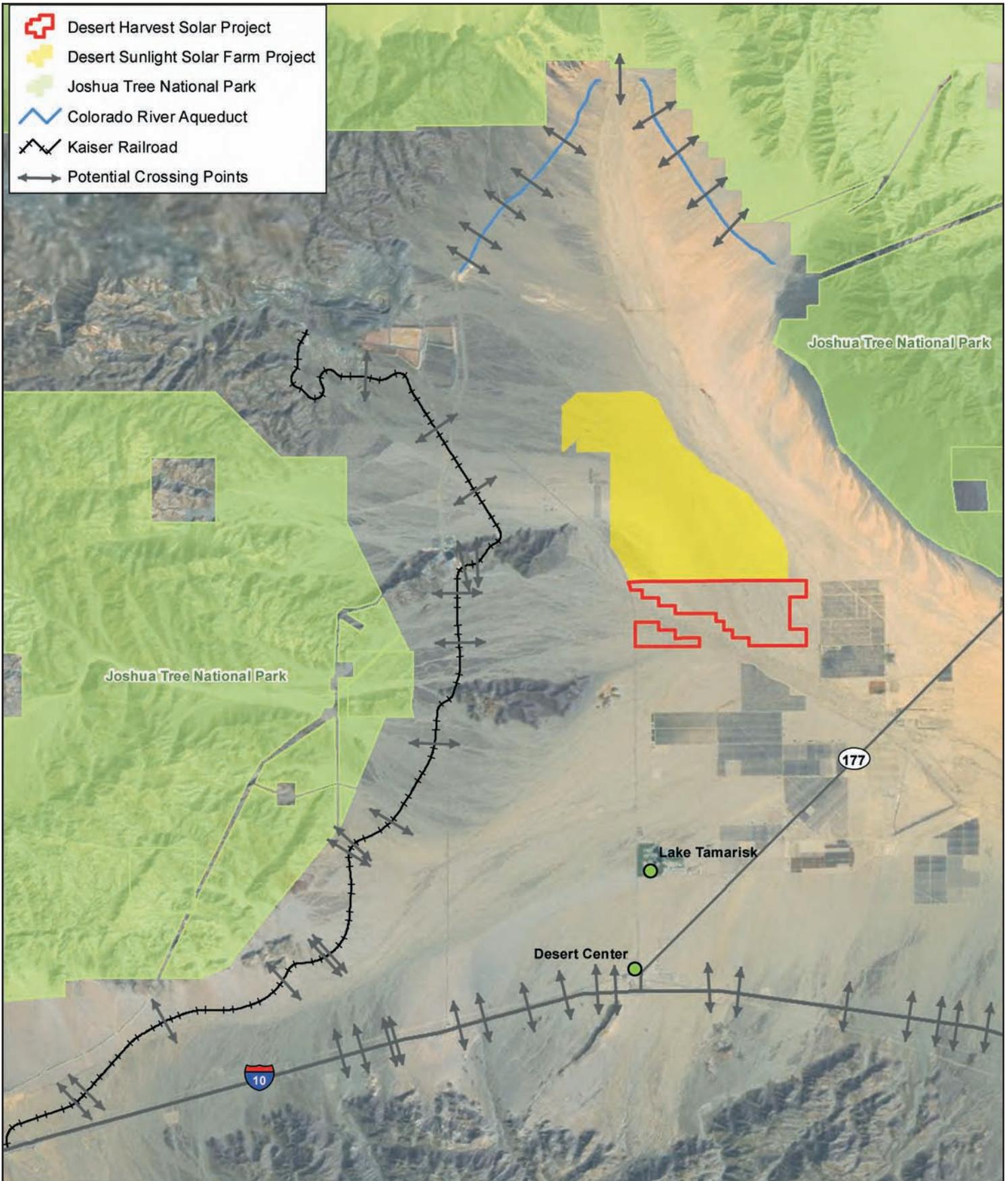




Photo 1. Typical Example of Interstate 10 stream crossing with even grade.



Photo 2. Typical example of Interstate 10 box culvert crossing, with uneven grade and rock armoring downstream side of each culvert.